STATUTORY INSTRUMENTS

1986 No. 1066

MERCHANT SHIPPING

SAFETY

The Merchant Shipping (Life-Saving Appliances) Regulations 1986

Laid before Parliament in draft

Made - - -	*25th June* 1986
Coming into Operation	*1st July* 1986

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The Secretary of State for Transport, after consultation with the persons referred to in section 22(2) of the Merchant Shipping Act 1979(**a**), in exercise of the powers conferred on him by section 21(1)*(a)* and *(b)*, (3), (4), (5) and (6) and by section 22(1) of that Act and of all other powers enabling him in that behalf, hereby makes the following Regulations:

(**a**) 1979 c.39.

Citation

1. These Regulations may be cited as the Merchant Shipping (Life-Saving Appliances) Regulations 1986 and shall come into operation on 1st July 1986.

Interpretation

2.— (1) In these Regulations,

"buoyant lifeline" means a line complying with the requirements of Part V of Schedule 9;

"buoyant smoke signal" means a pyrotechnic signal complying with the requirements of Part III of Schedule 8;

"cargo ship" means any ship which is not a passenger ship, pleasure craft or fishing vessel;

"certificated person" means a member of the crew who holds either

(a) a Certificate of Proficiency in Survival Craft under The Merchant Shipping (Certificates of Proficiency in Survival Craft) Regulations 1984(**a**) or such certificate issued by or under the authority of any government outside the United Kingdom which is accepted by the Secretary of State as being the equivalent to a certificate issued under those Regulations; or

(b) a Certificate of Efficiency as Lifeboatman issued before 28th April 1984 by or under the authority of the Secretary of State or such certificate issued before 28th April 1984 by or under the authority of any government outside the United Kingdom which is accepted by the Secretary of State as being the equivalent of such a certificate issued by or under the authority of the Secretary of State;

"chemical tanker" means a cargo ship constructed or adapted and used for the carriage in bulk of any liquid product listed in either:

1. Chapter 17 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk adopted by the Maritime Safety Committee by Resolution MSC 4 (48); or
2. Chapter VI of the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk adopted by the Assembly of the Organisation by Resolution A 212 (VII),

whichever is applicable;

"date of expiry" in relation to any product referred to in Schedules 8 and 9 means a date within 3 years from the date of manufacture of that product;

"detection" means the determination of the location of survivors or survival craft;

"embarkation ladder" means a ladder complying with the requirements of Part V of Schedule 6 provided at survival craft embarkation stations to permit safe access to survival craft after launching;

"favourable weather" means fine, clear settled weather with a sea state such as to cause only moderate rolling and/or pitching;

(**a**) S.I. 1984/97.

"fishing vessel" means a vessel used for catching, otherwise than for sport, fish, whales, seals, walrus or other living resources of the sea and includes a fishery research vessel;

"float-free launching" means that method of launching a survival craft whereby the craft is automatically released from a sinking ship and is ready for use;

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

"gas carrier" means a cargo ship constructed or adapted and used for the carriage in bulk or any liquefied gas or other product listed in either:

1. Chapter 19 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk adopted by the Maritime Safety Committee by Resolution 5 (48); or
2. Chapter XIX of the Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk adopted by the International Maritime Organisation by Resolution A 328 (IX),

whichever is applicable;

"general emergency alarm system" means a system complying with the requirements of Schedule 13;

"hand flare" means a pyrotechnic signal complying with the requirements of Part II of Schedule 8;

"immersion suit" means a protective suit which reduces the body heat-loss of a person wearing it in cold water and complies with the requirements of Part I of Schedule 11;

"inflatable appliance" means an appliance which depends upon non-rigid, gas filled chambers for buoyancy and which is normally kept uninflated until ready for use;

"inflated appliance" means an appliance which depends upon non-rigid, gas filled chambers for buoyancy and which is kept inflated and ready for use at all times;

"inflated boat" means a boat complying with the requirements of Schedule 3 and suitable for rescuing persons in distresss and marshalling liferafts;

"instructions for on-board maintenance" means the instructions complying with the requirements of Part II of Schedule 12;

"international voyage" means a voyage from a country to which the International Convention for the Safety of Life at Sea, 1974 applies, to a port outside that country or conversely;

"launching appliance or arrangement" means provisions complying with the requirements of Part I and Part II, III or IV of Schedule 6 for safely transferring a lifeboat and rescue boat, liferaft or inflated boat respectively, from its stowed position to the water;

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

"lifeboat radiotelegraph installation" means radio equipment complying with the relevant requirements of Part V of the Merchant Shipping (Radio Installation) Regulations, 1980(**a**);

"lifebuoy" except where otherwise expressly provided means a lifebuoy complying with the requirements of Part I of Schedule 9;

"lifejacket" means a lifejacket complying with the requirements of Part I or II of Schedule 10;

"lifejacket light" means a light complying with the requirements of Part III of Schedule 10;

"liferaft" except as otherwise expressly provided, means a survival craft complying with the requirements of Part I or III of Schedule 4;

"limited European Area" means the area so defined in Schedule 2 to the Merchant Shipping (Certification of Deck Officers) Regulations 1985(**b**);

"line-throwing appliance" means an appliance complying with the requirements of Part V of Schedule 8;

"long international voyage" means an international voyage which is not a short international voyage as defined in this regulation;

"marine escape system" means a system complying with the requirements of Schedule 5;

"mile" means a nautical mile of 1852 metres;

"moulded depth"

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

(b) In ships having rounded gunwales, the moulded depth shall be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design.

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

"new ship" means a ship the keel of which is laid, or where construction identifiable with the ship begins, on or after 1st July 1986, and in the latter case where assembly has commenced comprising at least 50 tonnes or 1% of the estimated mass of all structural material, whichever is less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship, the keel of which is laid or which is at a similar stage of construction on the date on which such a conversion commences;

(**a**) S.I. 1980/529, to which there are amendments not relevant to these Regulations.
(**b**) S.I. 1985/1306.

"non-United Kingdom ship" means a ship other than a United Kingdom ship;

"partially smooth waters" means as respects any period specified in Schedule 2 to the Merchant Shipping (Smooth and Partially Smooth Waters) Rules 1977(**a**), the waters of any of the areas specified in column 3 of that Schedule in relation to that period;

"passenger ship" means a ship carrying more than 12 passengers;

"person" means a person over the age of one year;

"pleasure craft" means a vessel (other than a passenger ship and ship engaged in trade) primarily used for sport or recreation;

"portable radio equipment" means radio equipment complying with the relevant requirements of Part V of The Merchant Shipping (Radio Installation) Regulations 1980;

"rations" means rations complying with the requirements of Part III of Schedule 7;

"red star distress rocket signal" means a pyrotechnic signal complying with the requirements of Part IV of Schedule 8;

"rescue boat" means a boat complying with the requirements of Part I, II or III of Schedule 2 and designed to rescue persons in distress and to marshal liferafts;

"restricted period" means a period falling wholly within the following limits:—

(a) from 1st April to 31st October, both dates inclusive; and

(b) between one hour before sunrise and one hour after sunset in the case of ships fitted with navigation lights conforming to the collision regulations and between sunrise and sunset in the case of any other ship;

"retrieval" means the safe recovery of survivors;

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

"rocket parachute flare" means a pyrotechnic signal complying with the requirements of Part I of Schedule 8;

"sailing ship" includes a ship provided with sufficient sail area for navigation under sails alone whether or not fitted with mechanical means of propulsion;

"sea" does not include any partially smooth waters;

"self-activating smoke signal" means a signal complying with the requirements of Part IV of Schedule 9;

"self-igniting light" means a light complying with the requirements of Part III of Schedule 9;

"service space" includes galleys, pantries containing cooking appliances, lockers and storerooms, paint rooms, baggage rooms, workshops other than those forming part of machinery spaces, mail rooms and similar spaces and trunks to such spaces;

(**a**) S.I. 1977/252; relevant amendments are S.I. 1977/632, 1978/801 and 1984/955.

"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. Neither the distance between the last port of call in the country in which the voyage begins and the final port of destination nor the return voyage shall exceed 600 miles. The final port of destination is the last port of call in the scheduled voyage at which the ship commences its return voyage to the country in which the voyage began;

"smooth waters" means any waters not being the sea or partially smooth waters and in particular means waters of any of the areas specified in column 2 of Schedule 2 to the Merchant Shipping (Smooth and Partially Smooth Waters) Rules 1977;

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

"survival craft emergency position—indicating radio beacon" means a radio beacon complying with the relevant requirements of Part V of the Merchant Shipping (Radio Installations) Regulations 1980;

"tanker" means a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature and also means a chemical tanker and gas carrier constructed or adapted to carry cargoes emitting toxic vapours or gases, or cargoes having a flash point not exceeding 60°C (closed cup test);

"thermal protective aid" means a bag or suit complying with the requirements of Part II of Schedule 11 made of waterproof material with low thermal conductivity;

"tons" means gross tons and a reference to tons:

(a) in relation to a ship having alternative gross tonnages under paragraph 13 of Schedule 5 of the Merchant Shipping (Tonnage) Regulations 1982(**a**) is a reference to the larger of those tonnages; and

(b) in relation to a ship having its tonnage determined both under Part II and regulation 16 of those Regulations is a reference to its gross tonnage as determined under regulation 16 of those Regulations.

"toxic vapours or gases" means the vapours or gases associated with products for which emergency escape, respiratory and eye protection is required in Chapter 17 of the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk adopted by the Maritime Safety Committee by Resolution MSC 4 (48) and in Chapter 19 of the International Code for the Construction and Equipment of Ships carrying Liquiefied Gases in Bulk adopted by the Maritime Safety Committee by Resolution 5 (48);

"training manual" means a manual complying with the requirements of Part I of Schedule 12;

"two-way radiotelephone set" means a radiotelephone apparatus complying with the requirements of Part V of the Merchant Shipping (Radio Installations) Regulations 1980 for communication between survival craft, between survival craft and ship and between ship and rescue boat;

(**a**) S.I. 1982/841.

"voyage" includes an excursion;

(2) Any reference in these Regulations to a British Standard shall include a reference to any document amending that publication which is considered by the Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice.

(3) A reference to any of the Codes referred to in the definitions of "chemical tanker", "gas carrier" and "toxic vapours or gases" shall be a reference to that Code as amended from time to time by the International Maritime Organization in any document which is considered by the Secretary of State to be relevant and is specified by him in a Merchant Shipping Notice as taking effect on a particular date.

(4) In these Regulations:—

(a) a reference to a numbered regulation is, unless otherwise stated, a reference to the regulation of that number in these Regulations;

(b) a reference in a regulation, Schedule or Part of a Schedule to a numbered paragraph is, unless otherwise stated, a reference to the paragraph of that number in that regulation, Schedule or Part of Schedule as the case may be; and

(c) a reference to a numbered schedule is a reference to the Schedule of that number to these Regulations.

Classification of ships

3. For the purposes of these Regulations ships shall be arranged in the following classes:—

Passenger Ships

Class I. Passenger ships engaged on voyages (not being short international voyages) any of which are long international voyages.

Class II. Passenger ships engaged on voyages (not being long international voyages) any of which are short international voyages.

Class II(A). Passenger ships (other than ships of Classes III to VI(A) inclusive) engaged on voyages of any kind other than international voyages.

Class III. Passenger ships engaged only on voyages in the course of which they are at no time more than 70 miles by sea from their port of departure and not more than 18 miles from the coast of the United Kingdom, and which are at sea only in favourable weather and during restricted periods.

Class IV. Passenger ships engaged only on voyages in partially smooth waters, or voyages in smooth and partially smooth waters.

Class V. Passenger ships engaged only on voyages in smooth waters.

Class VI. Passenger ships engaged only on voyages with not more than 250 passengers on board, to sea, or in smooth or in partially smooth waters, in all cases in favourable weather and during restricted periods, in the course of

which the ships are at no time more than 15 miles, exclusive of any smooth waters, from their point of departure nor more than 3 miles from land.

Class VI(A). Passenger ships carrying not more than 50 passengers for a distance of not more than 6 miles on voyages to or from isolated communities on the islands or coast of the United Kingdom and which do not proceed for a distance of more than 3 miles from land; subject to any conditions which the Secretary of State may impose.

Ships other than passenger ships

Class VII. Ships (other than ships of Classes I, VII(T), XI and XII) engaged on voyages any of which are long international voyages.

Class VII(T). Tankers engaged on voyages any of which are long international voyages.

Class VIII. Ships (other than ships of Classes II, VIII(T), IX, XI and XII) engaged on voyages (not being long international voyages) any of which are short international voyages.

Class VIII(T). Tankers engaged on voyages (not being long international voyages) any of which are short international voyages.

Class VIII(A). Ships (other than ships of Classes II(A) to VI(A) inclusive, VIII(A)(T), IX, IX(A), IX(A)(T), XI and XII) engaged only on voyages which are not international voyages.

Class VIII(A)(T). Tankers engaged only on voyages which are not international voyages.

Class IX. Tugs and tenders (other than ships of Classes II, II(A), III, VI and VI(A)) which proceed to sea but are not engaged on long international voyages.

Class IX(A). Ships (other than ships of Classes IV to VI inclusive) which do not proceed to sea.

Class IX(A)(T). Tankers which do not proceed to sea.

Class XI. Sailing ships (other than ships of Class XII) which proceed to sea.

Class XII. Pleasure craft of 13.7 metres in length or over.

Application

4.— (1) These Regulations apply to new ships of Classes I, II, II(A) and Classes VII to IX(A)(T) inclusive, XI and XII except:—

(a) fishing vessels;

(b) pleasure craft of less than 13.7 metres in length; and

(c) non-United Kingdom ships which are:—

(i) cargo ships of less than 500 tons;

(ii) ships not propelled by mechanical means; and

(iii) pleasure craft of whatever size.

(2) These Regulations apply to United Kingdom ships wherever they may be and (subject to paragraph 3), to non-United Kingdom ships while they are within the United Kingdom or the territorial waters thereof.

(3) These Regulations shall not apply to a non-United Kingdom ship flying the flag of a state which is not a party to the International Convention for the Safety of Life at Sea 1974 by reason of its being within the United Kingdom or the territorial waters thereof if it would not have been there but for stress of weather or any other circumstances which could not have been prevented by the master, the owner or the charterer (if any).

PART II—PASSENGER SHIPS

Ships of Class I

5.— (1) This regulation applies to new ships of Class I.

(2) Every such ship shall carry:—

(a) on each side of the ship lifeboats complying with the requirements of Part II, III or IV of Schedule 1 of sufficient aggregate capacity to accommodate 50% of the total number of persons which the ship is certified to carry; or

(b) lifeboats complying with the requirements of Part II, III or IV of Schedule 1 and liferafts together providing sufficient aggregate capacity to accommodate the total number of persons which the ship is certified to carry, provided that there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37½% of the total number of persons which the ship is certified to carry; the liferafts shall be served by launching appliances equally distributed on each side of the ship;

(c) in addition to the survival craft carried in compliance with sub-paragraphs *(a)* or *(b)*, liferafts of sufficient aggregate capacity to accommodate 25% of the total number of persons which the ship is certified to carry; such liferafts shall be served by at least one launching appliance on each side of the ship and may be those carried in compliance with sub-paragraph (2)*(b)* or equivalent approved appliances capable of being used on both sides.

(3)*(a)* Every such ship of less than 500 tons certified to carry less than 200 persons may in lieu of carrying the lifeboats and liferafts required by sub-paragraphs (2)*(a)* and *(c)* or sub-paragraphs (2)*(b)* and *(c)* carry on each side of the ship liferafts of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry. If such liferafts cannot be readily transferred for launching on either side of the ship additional liferafts shall be provided so that the total capacity available on each side will accommodate 150% of the total number of persons which the ship is certified to carry. Such liferafts shall be served by at least one launching appliance on each side of the ship.

(b) If the rescue boat required by sub-paragraph (4)*(b)* is also a lifeboat complying with the requirements of Part II, III or IV of Schedule 1, it

may be included in the aggregate capacity referred to in sub-paragraph *(a)* provided that the total capacity available on either side of the ship is at least 150% of the total number of persons the ship is certified to carry.

(c) The number and arrangement of survival craft shall be such that in the event of any one survival craft being lost or rendered unserviceable, there shall still be sufficient survival craft available for use on each side of the ship to accommodate the total number of persons the ship is certified to carry.

(4)*(a)* Every such ship of 500 tons and over shall carry at least one rescue boat on each side of the ship.

(b) Every such ship of less than 500 tons shall carry at least one rescue boat.

(c) A lifeboat may be accepted as a rescue boat provided it also complies with the requirements for a rescue boat.

(d) Every such ship shall carry sufficient lifeboats and rescue boats to ensure that in providing for abandonment by the total number of persons the ship is certified to carry not more than six liferafts need to be marshalled by each lifeboat or rescue boat.

(5) Each lifeboat and rescue boat shall be served by its own launching appliance.

(6) Every such ship shall be provided with:—

(a) survival craft radio equipment determined in accordance with the following table:—

No of persons ship certified to carry	Portable Radio Equipment	Lifeboat Radiotelegraph Installation
13–199	1	—
200–1499	1	1
1500 or more	—	2 (1 on each side)

(b) at least 3 two-way radiotelephone sets; and

(c) on each side of the ship, a survival craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

(7)*(a)* Every such ship shall carry at least the number of lifebuoys determined in accordance with the following table:—

Length of ship in metres	Number of lifebuoys
Under 60	8
60 and under 120	12
120 and under 180	18
180 and under 240	24
240 and over	30

(b) At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50% of the total number of lifebuoys, and on every ship to which this regulation applies of less than 60 metres in length not less than 6 lifebuoys, shall be provided with self-igniting lights and not less than two of the lifebuoys provided with

such lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge.

(8) Every such ship shall carry:—

(a) for each person the ship is certified to carry a lifejacket suitable for a person weighing 32 kg. or more;

(b) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board or for 10% of the number of passengers the ship is certified to carry whichever is the greater;

(c) in addition to the lifejackets carried in compliance with sub-paragraphs *(a)* and *(b)* lifejackets suitable for persons weighing 32 kg. or more for not less than 5% of the total number of persons the ship is certified to carry; and

(d) a sufficient number of lifejackets for persons on watch and for use at remotely located survival craft stations.

(9) Included in the number of lifejackets required to be carried by paragraph (8) there shall be at least sufficient inflatable lifejackets which comply with the requirements of Part II of Schedule 10 for the crew of each rescue boat and for those crew members whose emergency duties require a lifejacket which will not unduly hinder them during the execution of these duties.

(10) Each lifejacket required to be carried by paragraphs (8) and (9) shall be fitted with a lifejacket light.

(11) Every such ship shall carry an immersion suit of an appropriate size and as specified in regulation 25 for every person assigned to crew a rescue boat.

(12) Every such ship shall carry not less than 12 rocket parachute flares.

(13) Every such ship shall carry a line-throwing appliance.

(14) Every such ship shall be provided with:—

(a) an emergency means for two-way communication (which may be fixed or portable equipment or both) between emergency control stations, muster and embarkation stations and strategic positions on board;

(b) a general emergency alarm system and in addition either a public address system or other suitable means of communication; and

(c) lighting as specified in regulations 15(4) and (5) and 18(8).

(15) Every such ship shall be provided with:—

(a) posters or signs showing operating instructions on or in the vicinity of survival craft and their launching controls;

(b) a training manual in each crew messroom and recreation room or in each crew cabin; and

(c) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances.

(d) on the bridge, a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1" published by the Department of Transport.

Ships of Classes II and II(A)

6.— (1) This regulation applies to new ships of Classes II and II(A).

(2) Every such ship which is subdivided in accordance with the requirements of Part III of Schedule I to the Merchant Shipping (Passenger Ship Construction and Survey) Regulations, 1984(**a**) shall carry:—

(a) lifeboats complying with the requirements of Parts II, III or IV of Schedule 1 of sufficient aggregate capacity to accommodate at least 30% of the total number of persons which the ship is certified to carry. Such lifeboats shall be equally distributed, as far as practicable, on each side of the ship; and

(b) liferafts of sufficient aggregate capacity that together with the lifeboat capacity will accommodate the total number of persons which the ship is certified to carry; the liferafts shall be served by launching appliances equally distributed on each side of the ship.

(3) Every such ship which is not subdivided in accordance with the requirements of Part III of Schedule I to the Merchant Shipping (Passenger Ship Construction and Survey) Regulations, 1984 shall carry:—

(a) on each side of the ship lifeboats complying with the requirements of Part II, III or IV of Schedule 1 of sufficient aggregate capacity to accommodate 50% of the total number of persons which the ship is certified to carry; or

(b) lifeboats complying with the requirements of Part II, III or IV of Schedule 1, and liferafts together providing sufficient aggregate capacity to accommodate the total number of persons which the ship is certified to carry, provided that there shall never be less than sufficient lifeboats on each side of the ship to accommodate $37\frac{1}{2}\%$ of the total number of persons which the ship is certified to carry; the liferafts shall be served by launching appliances equally distributed on each side of the ship.

(4) In addition to the survival craft carried in compliance with paragraph (2) or (3) liferafts of sufficient aggregate capacity to accommodate 25% of the total number of persons which the ship is certified to carry. These liferafts shall be served by at least one launching appliance on each side of the ship and may be those carried in compliance with sub-paragraph (2)*(b)* or 3*(b)*, or equivalent approved appliances capable of being used on both sides.

(5)*(a)* Every such ship of less than 500 tons certified to carry less than 200 persons may in lieu of carrying the lifeboats and liferafts required by paragraphs (2) and (4) or paragraphs (3) and (4) carry on each side of the ship liferafts of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry. If such liferafts cannot be readily transferred for launching on either side of the ship additional liferafts shall be provided so that the total capacity available on each side will accommodate 150% of the total number of persons which the ship is certified to carry. Such liferafts shall be served by at least one launching appliance on each side of the ship.

(**a**) S.I. 1984/1216; relevant amendments are S.I. 1984/1220, 1985/680 and 1986/1074.

(b) If the rescue boat required by sub-paragraph (6)*(b)* is also a lifeboat complying with the requirements of Part II, III or IV of Schedule 1 it may be included in the aggregate capacity referred to in sub-paragraph *(a)* provided that the total capacity available on either side of the ship is at least 150% of the total number of persons the ship is certified to carry.

(c) The number and arrangement of survival craft shall be such that in the event of any one survival craft being lost or rendered unserviceable, there shall still be sufficient survival craft available for use on each side of the ship to accommodate the total number of persons the ship is certified to carry.

(6)*(a)* Every such ship of 500 tons and over shall carry at least one rescue boat on each side of the ship.

(b) Every such ship of less than 500 tons shall carry at least one rescue boat.

(c) A lifeboat may be accepted as a rescue boat provided it also complies with the requirements for a rescue boat.

(d) Every such ship which is subdivided in accordance with the requirements of Part III of Schedule I to the Merchant Shipping (Passenger Ship Construction and Survey) Regulations, 1984 shall carry sufficient lifeboats and rescue boats to ensure that in providing for abandonment by the total number of persons the ship is certified to carry, not more than nine liferafts need to be marshalled by each lifeboat or rescue boat.

Every ship which is not so subdivided shall be so equipped that not more than six liferafts need to be marshalled by each lifeboat or rescue boat.

(7) Each lifeboat and rescue boat shall be served by its own launching appliance.

(8) Every such ship shall be provided with:—

(a) portable radio equipment; this equipment shall not be required if a lifeboat radiotelegraph installation is provided or if the ship is engaged on voyages of such duration that in the opinion of the Secretary of State portable radio equipment is unnecessary;

(b) at least 3 two-way radiotelephone sets; and

(c) on each side of the ship, a survival craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

(9)*(a)* Every such ship shall carry at least the number of lifebuoys determined in accordance with the following table:—

Length of ship in metres	Number of lifebuoys
Under 60	8
60 and under 120	12
120 and under 180	18
180 and under 240	24
240 and over	30

(b) At least one lifebuoy on each side of the ship shall be fitted with a

buoyant lifeline. Not less than 50% of the total number of lifebuoys, and on every ship to which this regulation applies of less than 60 metres in length not less than 6 lifebuoys, shall be provided with self-igniting lights and not less than two of the lifebuoys provided with such lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge.

(10) Every such ship shall carry:—

(a) for each person the ship is certified to carry a lifejacket suitable for a person weighing 32 kg. or more;

(b) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board or for 10% of the number of passengers the ship is certified to carry whichever is the greater;

(c) in addition to the lifejackets carried in compliance with sub-paragraphs *(a)* and *(b)* lifejackets suitable for persons weighing 32 kg. or more for not less than 5% of the total number of persons the ship is certified to carry; and

(d) a sufficient number of lifejackets for persons on watch and for use at remotely located survival craft stations.

(11) Included in the number of lifejackets required to be carried by paragraph (10) there shall be at least sufficient inflatable lifejackets which comply with the requirements of Part II of Schedule 10 for the crew of each rescue boat and for those crew members whose emergency duties require a lifejacket which will not unduly hinder them during the execution of these duties.

(12) Every such ship shall carry an immersion suit of an appropriate size and as specified in regulation 25 for every person assigned to crew a rescue boat.

(13) Every such ship shall carry not less than 12 rocket parachute flares.

(14) Every such ship shall carry a line-throwing appliance.

(15) Every such ship shall be provided with:—

(a) an emergency means for two-way communication (which may be fixed or portable equipment or both) between emergency control stations, muster and embarkation stations and strategic positions on board;

(b) a general emergency alarm system and in addition either a public address system or other suitable means of communication; and

(c) lighting as specified in regulations 15(4) and (5) and 18(8).

(16) Every such ship shall be provided with:—

(a) posters or signs showing operating instructions, on or in the vicinity of survival craft and their launching controls;

(b) a training manual in each crew messroom and recreation room or in each crew cabin;

(c) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances; and

(d) on the bridge, a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1" published by the Department of Transport.

PART III—SHIPS OTHER THAN PASSENGER SHIPS

Ships of Classes VII, VIII, VIII(A) and IX

7.— (1) This regulation applies to new ships of Classes VII, VIII, VIII(A) and IX.

(2) Every such ship shall carry:—

(a) on each side of the ship one or more lifeboats complying with the requirements of Part IV of Schedule 1 of sufficient aggregate capacity to accommodate the total number of persons on board; provided that the Secretary of State may permit the carriage of lifeboats complying with the requirements of Part III of Schedule 1 in lieu of Part IV on ships operating solely under favourable climatic conditons and in suitable areas; and

(b) one or more liferafts capable of being launched on either side of the ship and of sufficient aggregate capacity to accommodate the total number of persons on board; if the liferaft or liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate the total number of persons on board.

(3) In lieu of complying with the requirements of paragraph (2) such ships may carry:—

(a) one or more lifeboats complying with the requirements of Part IV of Schedule 1, capable of free fall launching over the stern of the ship of sufficient aggregate capacity to accommodate the total number of persons on board; and

(b) on each side of the ship one or more liferafts of sufficient aggregate capacity to accommodate the total number of persons on board. The liferafts on at least one side of the ship shall be served by launching appliances.

(4)*(a)* Every such ship of less that 85 metres in length may in lieu of carrying the lifeboats and liferafts required by paragraphs (2) or (3) carry on each side of the ship one or more liferafts of sufficient aggregate capacity to accommodate the total number of persons on board.

(b) If such liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate 150% of the total number of persons on board.

(c) If the rescue boat required by paragraph (6) is also a lifeboat complying with the requirements of Part III or IV of Schedule 1 it may be included in the aggregate capacity referred to in sub-paragraph *(a)* provided that the total capacity available on either side of the ship is at least 150% of the total number of persons on board.

(d) The number and arrangement of survival craft shall be such that in the event of any one survival craft being lost or rendered unserviceable,

there shall still be sufficient survival craft available for use on each side of the ship to accommodate the total number of persons on board.

(5) Every such ship where survival craft are stowed in a position which is more than 100 metres from the stem or stern shall carry, in addition to the liferafts required by sub-paragraphs 2*(b)* or 3*(b)* a liferaft stowed as far forward or aft, or one as far forward and another as far aft, as is reasonable and practicable.

(6) Every such ship of 500 tons or over shall carry at least one rescue boat. Every such ship of less than 500 tons shall carry at least one rescue boat, or inflated boat fitted with an engine. A lifeboat may be accepted as a rescue boat provided that it also complies with the requirements for a rescue boat.

(7) Each lifeboat, rescue boat and inflated boat shall be served by its own launching appliance.

(8) Every tug of Class IX other than a tug of 500 tons or over engaged on an international voyage shall in addition to complying with the requirements of paragraph (2), (3) or (4), and with the requirements of paragraph (6), carry buoyant apparatus complying with the requirements of Schedule 10 to the Merchant Shipping (Life-Saving Appliances) Regulations 1980(**a**) sufficient to support the total number of persons on board.

(9) Every such ship shall carry:—

(a) portable radio equipment; this equipment shall not be required if a lifeboat radiotelegraph installation is provided or if the ship is engaged on voyages of such duration that in the opinion of the Secretary of State portable radio equipment is unnecessary;

(b) at least 3 two-way radiotelephone sets; and

(c) on each side of the ship, a survival craft emergency position–indicating radio beacon so stowed that it can be rapidly placed in any survival craft other than those required by paragraph (5).

(10)*(a)* Every such ship shall carry at least the number of lifebuoys determined in accordance with the following table:—

Length of ship in metres	Number of lifebuoys
Under 100	8
100 and under 150	10
150 and under 200	12
200 and over	14

provided that in ships under 100 metres in length and less than 500 tons, not more than 4 lifebuoys need be carried.

(b) At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50% of the total number of lifebuoys shall be provided with self-igniting lights and not less than two of the lifebuoys provided with such lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge.

(**a**) S.I. 1980/538, amended by S.I. 1981/577 and 1986/1072.

(11) Every such ship shall carry:—

(a) a lifejacket suitable for a person weighing 32 kg. or more for each person on board;

(b) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board provided that there shall never be less than 2 such lifejackets on any ship which ever carries children; and

(c) a sufficient number of lifejackets for persons on watch and for use at remotely located survival craft stations provided that there shall be at least 4 additional lifejackets on ships where the number on board is 16 or less and at least an additional 25% of the number of lifejackets required to be carried by sub-paragraph *(a)* in the case of ships where the number on board is more than 16, but provided that the number of additional lifejackets need not exceed the number of persons on board.

(12) Included in the number of lifejackets required by paragraph (11) to be carried there shall be at least sufficient inflatable lifejackets which comply with the requirements of Part II of Schedule 10 for the crew of the rescue boat and for those crew members whose emergency duties require a lifejacket which will not unduly hinder them during the execution of these duties.

(13) Each lifejacket required by paragraphs (11) and (12) to be carried shall be fitted with a lifejacket light.

(14) Every such ship shall carry an immersion suit of an appropriate size and as specified in regulation 25 for every person assigned to crew the rescue boat or inflated boat.

(15)*(a)* Every such ship which carries survival craft as prescribed in sub-paragraph 4*(a)* shall carry an immersion suit as specified in regulation 25 for every person on board unless:—

(i) the liferafts are served by launching appliances; or

(ii) the liferafts are served by equivalent approved appliances capable of being used on both sides of the ship and which do not require entry into the water to board the liferaft; or

(iii) the ship is constantly engaged on voyages between the parallels of latitude of 20° north and south.

(b) The immersion suits required by this paragraph may be used to comply with the requirements of paragraph (14).

(16) Every such ship shall carry not less than 12 rocket parachute flares.

(17) Every such ship of 12 metres in length and over shall carry a line-throwing appliance.

(18) Every such ship shall be provided with:—

(a) an emergency means for two-way communication (which may be fixed or portable equipment or both) between emergency control stations, muster and embarkation stations and strategic positions on board;

(b) a general emergency alarm system except that in ships of less than 45.7 metres in length the additional electrically operated means referred to in paragraph 1 of Schedule 13 need not be provided; in addition in

ships of 500 tons or over either a public address system or other suitable means of communication; and

(c) lighting as specified in regulations 15(4) and (5) and 18(8), provided that in ships of less than 500 tons such lighting need only be provided from one source of electrical power.

(19) Every such ship shall be provided with:—

(a) posters or signs showing operating instructions in the vicinity of survival craft and their launching controls;

(b) a training manual in each crew messroom and recreation room or in each crew cabin;

(c) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances; and

(d) on the bridge, a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

Ships of Classes VII(T), VIII(T) and VIII(A)(T)

8.— (1) This regulation applies to new ships of Classes VII(T), VIII(T) and VIII(A)(T).

(2) Every such ship carrying cargo emitting toxic vapours or gases shall carry on each side of the ship one or more lifeboats complying with the requirements of Part V of Schedule 1 of sufficient aggregate capacity to accommodate the total number of persons on board.

(3) Every such ship carrying cargo having a flashpoint not exceeding 60°C (closed cup test) shall carry on each side of the ship one or more lifeboats complying with the requirements of Part VI of Schedule 1 of sufficient aggregate capacity to accommodate the total number of persons on board.

(4) Every such ship shall carry in addition to the lifeboats required by paragraphs (2) or (3), one or more liferafts capable of being launched on either side of the ship and of sufficient aggregate capacity to accommodate the total number of persons on board. If the liferaft or liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate the total number of persons on board.

(5) In lieu of complying with the requirements of paragraphs (2) and (4) such ships carrying cargoes emitting toxic vapours or gases may carry:—

(a) one or more lifeboats complying with the requirements of Part V of Schedule 1, capable of free fall launching over the stern of the ship of sufficient aggregate capacity to accommodate the total number of persons on board; and

(b) one or more liferafts on each side of the ship of sufficient aggregate capacity to accommodate the total number of persons on board. The liferafts on at least one side of the ship shall be served by launching appliances.

(6) In lieu of complying with the requirements of paragraphs (3) and (4) such

ships carrying cargoes having a flashpoint not exceeding 60°C (closed cup test) may carry:—

(a) one or more lifeboats complying with the requirements of Part VI of Schedule 1, capable of free fall launching over the stern of the ship of sufficient aggregate capacity to accommodate the total number of persons on board; and

(b) one or more liferafts on each side of the ship of sufficient aggregate capacity to accommodate the total number of persons on board; the liferafts on at least one side of the ship shall be served by launching appliances.

(7)*(a)* Every such ship of less than 500 tons may in lieu of carrying the lifeboats and liferafts required by paragraphs (2) and (4), (3) and (4), (5) or (6) carry one or more liferafts on each side of the ship of sufficient aggregate capacity to accommodate the total number of persons on board.

(b) If such liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate 150% of the total number of persons on board.

(c) If the rescue boat required by paragraph (9) is also a lifeboat complying with the requirements of Parts V or VI of Schedule 1 it may be included in the aggregate capacity referred to in sub-paragraph *(a)* provided that the total capacity available on either side of the ship is at least 150% of the total number of persons on board.

(d) The number and arrangement of survival craft shall be such that in the event of any one survival craft being lost or rendered unserviceable, there shall be sufficient survival craft available for use on each side to accommodate the total number of persons on board.

(8) Every such ship where survival craft are stowed in a position which is more than 100 metres from the stem or stern shall carry, in addition to the liferafts required by paragraphs 4, 5*(b)* or 6*(b)* a liferaft stowed as far forward or aft as is reasonable and practicable.

(9) Every such ship of 500 tons or over shall carry at least one rescue boat. Every such ship of less than 500 tons shall carry at least one rescue boat, or inflated boat fitted with an engine. A lifeboat may be accepted as a rescue boat provided that it also complies with the requirements for a rescue boat.

(10) Each lifeboat, rescue boat and inflated boat shall be served by its own launching appliance.

(11) Every such ship shall carry:—

(a) portable radio equipment; this equipment shall not be required if a lifeboat radiotelegraph installation is provided or if the ship is engaged on voyages of such duration that in the opinion of the Secretary of State portable radio equipment is unnecessary;

(b) at least 3 two-way radiotelephone sets; and

(c) on each side of the ship, a survival craft emergency position-indicating

radio beacon so stowed that it can be rapidly placed in any survival craft other than those required by paragraph (8).

(12)*(a)* Every such ship shall carry at least the number of lifebuoys determined in accordance with the following table:—

Length of ship in metres	Number of lifebuoys
Under 100	8
100 and under 150	10
150 and under 200	12
200 and over	14

provided that in ships under 100 metres in length and less than 500 tons, not more than 4 lifebuoys need be carried.

(b) At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50% of the total number of lifebuoys shall be provided with self-igniting lights of an electric battery type and not less than two of the lifebuoys provided with such lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge.

(13) Every such ship shall carry:—

(a) a lifejacket suitable for a person weighing 32 kg. or more for each person on board; and

(b) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board provided that there shall never be less than 2 such lifejackets on any ship which ever carries children; and

(c) a sufficient number of lifejackets for persons on watch and for use at remotely located survival craft stations provided that there shall be at least 4 additional lifejackets on ships where the number on board is 16 or less and at least an additional 25% of the number of lifejackets required to be carried by sub-paragraph *(a)* in the case of ships where the number on board is more than 16 but provided that the number of additional lifejackets need not exceed the number of persons on board.

(14) Included in the number of lifejackets required by paragraph (13) to be carried there shall be at least sufficient inflatable lifejackets which comply with the requirements of Part II of Schedule 10 for the crew of the rescue boat and for those crew members whose emergency duties require a lifejacket which will not unduly hinder them during the execution of those duties.

(15) Each lifejacket required by paragraphs (13) and (14) to be carried shall be fitted with a lifejacket light.

(16) Every such ship shall carry an immersion suit of an appropriate size and as specified in regulation 25 for every person assigned to crew the rescue boat or inflated boat.

(17)*(a)* Every such ship which carries survival craft as prescribed in sub-paragraph 7*(a)* shall carry an immersion suit as specified in regulation 25 for every person on board unless:—

(i) the liferafts are served by launching appliances; or

(ii) the liferafts are served by equivalent approved appliances capable

of being used on both sides of the ship and which do not require entry into the water to board the liferaft; or

(iii) the ship is constantly engaged on voyages between the parallels of latitude of 20° north and south.

(b) The immersion suits required by this paragraph may be used to comply with the requirements of paragraph (16).

(18) Every such ship shall carry not less than 12 rocket parachute flares.

(19) Every such ship shall carry a line-throwing appliance.

(20) Every such ship shall be provided with:—

(a) an emergency means for two-way communication (which may be fixed or portable equipment or both) between emergency control stations, muster and embarkation stations and strategic positions on board;

(b) a general emergency alarm system except that in ships of less than 45.7 metres in length the additional electrically operated means referred to in paragraph 1 of Schedule 13 need not be provided; in addition in ships of 500 tons or over either a public address system or other suitable means of communication; and

(c) lighting as specified in regulations 15(4) and (5) and 18(8), provided that in ships of less than 500 tons such lighting need only be provided from one source of electrical power.

(21) Every such ship shall be provided with:—

(a) posters or signs showing operating instructions on or in the vicinity of survival craft and their launching controls;

(b) a training manual in each crew messroom and recreation room or in each crew cabin;

(c) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances; and

(d) on the bridge, a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

Ships of Classes IX(A) and IX(A)(T)

9.— (1) This regulation applies to new ships of Classes IX(A) and IX(A)(T).

(2) Every such ship shall when in smooth waters carry equipment appropriate to its length as follows:—

(a) Ships of less than 12 metres in length shall carry either one lifebuoy complying with Part I of Schedule 9 for each two persons on board or one lifebuoy complying with Part II of Schedule 9 for each person provided that at least two lifebuoys are carried and that all lifebuoys carried are the same type. One lifebuoy shall be fitted with a buoyant lifeline at least 18 metres in length and one lifebuoy with a self-igniting light and self-activating smoke signal.

(b) Ships of 12 metres in length and over but less than 20 metres in length shall carry:—

(i) one lifebuoy for each two persons on board provided that at least two lifebuoys are carried; one lifebuoy shall be fitted with a buoyant lifeline at least 18 metres in length and one lifebuoy with a self-igniting light and self-activating smoke signal;

(ii) a lifejacket suitable for a person weighing 32 kg. or more for each person on board; and

(iii) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board.

(c) Ships of 20 metres in length and over shall carry:—

(i) one lifebuoy for each two persons on board provided that at least four lifebuoys are carried; one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline and one lifebuoy on each side of the ship with a self-igniting light and self-activating smoke signal;

(ii) a lifejacket suitable for a person weighing 32 kg. or more for each person on board; and

(iii) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board.

(d) In ships of Class IX(A)(T) lifebuoy self-igniting lights shall be of an electric battery type.

(3) Every such ship shall when in partially smooth waters carry equipment appropriate to its length as follows:—

(a) Ships of less than 12 metres in length shall carry:—

(i) either one lifebuoy complying with Part I of Schedule 9 for each two persons on board or one lifebuoy complying with Part II of Schedule 9 for each person provided that at least two lifebuoys are carried and that all lifebuoys carried are of the same type; one lifebuoy shall be fitted with a buoyant lifeline at least 18 metres in length and one lifebuoy with a self-igniting light and self-activating smoke signal; and

(ii) six red star distress rocket signals.

(b) Ships of 12 metres in length and over but less than 20 metres in length shall carry:—

(i) one or more liferafts complying with the requirements of Part I, II or III of Schedule 4 of sufficient aggregate capacity to accommodate the total number of persons on board; if the liferaft or liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate the total number of persons on board;

(ii) two lifebuoys, one of which shall be fitted with a buoyant lifeline at least 18 metres in length and the other with a self-igniting light and self-activating smoke signal;

(iii) a lifejacket suitable for a person weighing 32 kg. or more for each person on board;

(iv) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board; and

(v) six red star distress rocket signals.

(c) Ships of 20 metres in length and over shall carry:—

(i) one or more liferafts complying with the requirements of Part I, II or III of Schedule 4 of sufficient aggregate capacity to accommodate the total number of persons on board; if the liferaft or liferafts cannot be readily transferred for launching on either side of the ship the total capacity available on each side shall be sufficient to accommodate the total number of persons on board;

(ii) four lifebuoys, two of which shall be fitted with buoyant lifelines and two with self-igniting lights and self-activating smoke signals;

(iii) a lifejacket suitable for a person weighing 32 kg. or more for each person on board;

(iv) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board; and

(v) six red star distress rocket signals.

(d) In ships of Class IX(A)(T) lifebuoy self-igniting lights shall be of an electric battery type.

(4) Every tug to which paragraphs (2) and (3) apply shall in addition to the equipment required by these paragraphs carry buoyant apparatus complying with the requirements of Schedule 10 to the Merchant Shipping (Life-Saving Appliances) Regulations 1980 of sufficient aggregate capacity to accommodate the total number of persons on board.

(5) Every such ship to which paragraphs 3*(b)* and *(c)* and paragraph (4) apply shall be provided with:—

(a) lighting as specified in regulations 15(4) and (5) and 18(8) provided from at least one source of electrical power;

(b) posters and signs showing operating instructions on or in the vicinity of the liferafts and their launching controls where provided;

(c) a training manual; and

(d) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances.

Ships of Class XI

10.— (1) This regulation applies to new ships of Class XI.

(2) Every such ship shall carry:—

(a) one or more liferafts on each side of the ship of sufficient aggregate capacity to accommodate the total number of persons on board provided that:—

(i) if the liferafts cannot be readily transferred for launching on either side of the ship, the total capacity available on each side shall be sufficient to accommodate 150% of the total number of persons on board;

(ii) if the rescue boat required by sub-paragraph *(b)* is also a lifeboat complying with the requirements of Part II, III or IV of Schedule 1 it may be included in the aggregate capacity referred to in sub-

paragraph *(a)* provided the total capacity available on either side of the ship is at least 150% of the total number of persons on board; and

(iii) the number and arrangement of survival craft shall be such that in the event of any one survival craft being lost or rendered unserviceable, there shall be sufficient survival craft available for use on each side to accommodate the total number of persons on board.

(b) at least one rescue boat, provided that in ships of less than 500 tons an inflated boat fitted with an engine may be carried in lieu of a rescue boat; a lifeboat may be accepted as a rescue boat provided that it also complies with the requirements for a rescue boat. The lifeboat, rescue boat or inflated boat shall be served by its own launching appliance.

(3) Every such ship shall carry:—

(a) at least 3 two-way radio-telephone sets; and

(b) on each side of the ship, a survival craft emergency position–indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

(4)*(a)* Every such ship shall carry at least the number of lifebuoys determined in accordance with the following table:—

Length of ship in metres	Number of lifebuoys
Under 50	6
50 and over	8

(b) Ships of less than 12 metres in length may carry in lieu of lifebuoys complying with Part I of Schedule 9, lifebuoys complying with Part II of Schedule 9 provided that all lifebuoys carried are of the same type.

(c) At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50% of the total number of lifebuoys shall be provided with self-igniting lights and not less than two of the lifebuoys provided with such lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge/steering position. On ships of less than 12 metres in length the buoyant lifelines shall be at least 18 metres in length.

(5) Every such ship shall carry:—

(a) a lifejacket suitable for a person weighing 32 kg. or more for each person on board;

(b) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board provided that there shall never be less than 2 such lifejackets on any ship which ever carries children;

(c) a sufficient number of lifejackets for persons on watch and for use at remotely located survival craft stations provided that there shall be at least 4 additional lifejackets on ships where the number on board is 16 or less and at least an additional 25% of the number of lifejackets required to be carried by sub-paragraph *(a)* in the case of ships where the number on board is more than 16 but provided that the number of additional lifejackets need not exceed the number of persons on board.

(6) Included in the number of lifejackets required to be carried by paragraph (5) there shall be at least sufficient inflatable lifejackets which comply with the requirements of Part II of Schedule 10 for the crew of the rescue boat and for those crew members whose emergency duties require a lifejacket which will not unduly hinder them during the execution of these duties.

(7) Each lifejacket required to be carried by paragraphs (5) and (6) shall be fitted with a lifejacket light.

(8) Every such ship shall carry an immersion suit of an appropriate size and as specified in regulation 25 for every person assigned to crew the rescue boat or inflated boat.

(9)*(a)* Every such ship shall carry an immersion suit as specified in regulation 25 for every person on board unless:—

(i) the liferafts are served by launching appliances; or

(ii) the liferafts are served by equivalent approved appliances capable of being used on both sides of the ship and which do not require entry into the water to board the liferaft; or

(iii) the ship is constantly engaged on voyages between the parallels of latitude of 20° north and south.

(b) The immersion suits required by this paragraph may be used to comply with the requirements of paragraph (8).

(10) Every such ship shall carry not less than 12 rocket parachute flares.

(11) Every such ship of 12 metres in length and over shall carry a line-throwing appliance.

(12) Every such ship shall be provided with:—

(a) a general emergency alarm system except that in ships of less than 45.7 metres in length the additional electrically operated means referred to in paragraph 1 of Schedule 13 need not be provided; and

(b) lighting as specified in regulations 15(4) and (5) and 18(8) provided that such lighting need only be provided from one source of electrical power.

(13) Every such ship shall be provided with:—

(a) posters or signs showing operating instructions on or in the vicinity of survival craft and their launching controls;

(b) a training manual in each crew messroom and recreation room or in each crew cabin;

(c) instructions for on-board maintenance of life-saving appliances or a shipboard planned maintenance programme which includes the maintenance of life-saving appliances; and

(d) a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

Ships of Class XII

11.— (1) This regulation applies to new ships of Class XII.

(2) Every such ship of 21.3 metres in length and over shall carry:—

(a) at least two liferafts so stowed that they can be readily transferred to the water on either side of the ship, of sufficient aggregate capacity to accommodate twice the total number of persons on board;

(b) four lifebuoys, two of which shall be fitted with buoyant lifelines and two with self-igniting lights and self-activating smoke signals;

(c) a lifejacket suitable for a person weighing 32 kg. or more for each such person on board;

(d) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board;

(e) a lifejacket light fitted on each of the lifejackets required by sub-paragraphs *(c)* and *(d)*;

(f) either

(i) 6 rocket parachute flares or

(ii) 6 red star distress rocket signals;

(g) a line-throwing appliance;

(h) posters or signs showing operating instructions on or in the vicinity of survival craft and their launching controls;

(i) a training manual;

(j) instructions for on-board maintenance of life-saving appliances; and

(k) a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

and any such ship of 25.9 metres in length or over shall carry in addition a rescue boat or inflated boat. A lifeboat may be accepted as a rescue boat provided that it also complies with the requirements for a rescue boat. The lifeboat, rescue boat or inflated boat shall be served by a launching appliance.

(3) Every such ship to which this regulation applies of 13.7 metres in length or over but less than 21.3 metres in length and engaged on either a voyage to sea in the course of which it is more than 3 miles from the coast of the United Kingdom or a voyage to sea during the months of November to March, inclusive, shall carry:—

(a) one or more liferafts complying with the requirements of Part I, II or III of Schedule 4 so stowed as to be readily transferrable to the water on either side of the ship and of sufficient aggregate capacity to accommodate the total number of persons on board;

(b) two lifebuoys, one of which shall be fitted with a self-igniting light and self-activating smoke signal;

(c) a buoyant lifeline at least 18 metres in length;

(d) a lifejacket suitable for person weighing 32 kg. or more for each such person on board;

(e) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board;

(f) a lifejacket light fitted on each of the lifejackets required by sub-paragraphs *(d)* and *(e)*;

(g) if operating in partially smooth waters or proceeding to sea either

(i) 6 rocket parachute flares, or

(ii) 6 red distress rocket signals; and

(h) posters or signs showing operating instructions on or in the vicinity of survival craft and their launching controls;

(i) a training manual;

(j) instructions for on-board maintenance of life-saving appliances; and

(k) a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

(4) Every such ship of 13.7 metres in length or over but less than 21.3 metres in length which does not proceed to sea or which only proceeds to sea during the months of April to October, inclusive, on voyages in the course of which it is not more than 3 miles from the coast of the United Kingdom shall carry:—

(a) one lifebuoy for each two persons on board provided that at least two lifebuoys are carried; such ships which operate only in smooth waters shall not be required to carry more than two lifebuoys. One lifebuoy shall be fitted with a self-igniting light and self-activating smoke signal;

(b) a buoyant lifeline at least 18 metres in length;

(c) a lifejacket suitable for a person weighing 32 kg. or more for each such person on board;

(d) a lifejacket suitable for a person weighing less than 32 kg. for each such person on board;

(e) a lifejacket light fitted on each of the lifejackets required by sub-paragraphs *(c)* and *(d)* in the case of ships which proceed to sea;

(f) if operating in partially smooth waters or proceeding to sea either

(i) 6 rocket parachute flares, or

(ii) 6 red star distress rocket signals;

(g) a copy of the table "Life-Saving Signals and Rescue Methods, SOLAS No 1", published by the Department of Transport.

(5) In lieu of carrying lifejackets complying with the requirements of Part I or II of Schedule 10 every such ship may carry lifejackets complying with British Standard Specification BS 3595: 1981 provided such lifejackets do not depend wholly upon oral inflation. Lifejackets of the partially inherently buoyant type for persons weighing 32 kg. or more shall have buoyancy in the uninflated state of not less than 89 newtons.

PART IV—GENERAL REQUIREMENTS

Approval and replacement of life-saving appliances

12.— (1) Life-saving appliances and arrangements required by these regulations shall be of a type which has been approved by the Secretary of State.

(2) Any such approval given pursuant to these Regulations shall be given in writing and shall specify the date when it is to come into force and the conditions (if any) on which it is given.

(3) Any item of life-saving equipment marked with an expiry date shall be replaced on or before that date.

Operational readiness, maintenance, inspections and servicing

13.— (1) All life-saving appliances shall be in working order and ready for immediate use before any ship commences a voyage and at all times during the voyage.

(2) Maintenance of life-saving appliances shall be carried out in accordance with the instructions for on-board maintenance, or in accordance with a shipboard planned maintenance programme which includes the requirements of Part II of Schedule 12.

(3) Falls used in launching shall be turned end for end at intervals of not more than 30 months and be renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier. Stainless steel falls shall be turned end for end at intervals of not more than 30 months but need not be renewed provided that on inspection there are no signs of mechanical damage or other possible defects.

(4) Spares and repair equipment shall be provided for life-saving appliances and their components which are subject to excessive wear or consumption and need to be replaced regularly.

(5) The following tests and inspections shall be carried out weekly:—

(a) all survival craft, rescue boats and launching appliances shall be visually inspected to ensure that they are ready for use;

(b) all engines in lifeboats and rescue boats shall be run ahead and astern for a total period of not less than 3 minutes provided the ambient temperature is not lower than that at which the engine is required to start; and

(c) the general emergency alarm system shall be tested.

(6) Inspection of the life-saving appliances, including lifeboat equipment, shall be carried out monthly using the check list referred to in Part II of Schedule 12. A report of the inspection shall be entered in the log referred to in paragraph 2.7 of Part II of Schedule 12.

(7) Liferaft automatic release hooks shall be serviced at intervals not exceeding 30 months and shall be proof tested at 100% safe working load at intervals not exceeding 5 years.

(8) Rescue boat release gears and lifeboat disengaging gears shall be overhauled at intervals not exceeding 5 years. At least once every 5 years rescue boats and lifeboats shall be turned out and lowered when loaded with weights to simulate their full safe working load.

(9) Every inflatable liferaft, inflated and rigid inflated rescue boat, inflated boat, inflatable lifejacket and hydrostatic release unit shall be serviced at a

service station approved by the Secretary of State at intervals not exceeding 12 months, provided that in any case where this is impracticable, such interval may be extended by a period not exceeding 5 months.

(10) Emergency repairs to inflated and rigid inflated rescue boats and inflated boats may be carried out on board ships but permanent repairs shall be effected at an approved service station as soon as practicable.

Operating instructions for survival craft and their launching controls

14.— (1) Posters and signs provided on or in the vicinity of survival craft and their launching controls shall:—

(a) illustrate the purpose of controls and the procedures for operating the appliance and give relevant instructions;

(b) be easily seen under emergency lighting conditions on ships of Classes I, II, II(A), VII, VII(T), VIII, VIII(T) and IX to which regulation 46(1) of the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 or regulation 45(1) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984 apply as appropriate;

(c) where applicable use symbols which are to the satisfaction of the Secretary of State and are specified in a Merchant Shipping Notice.

Survival craft muster and embarkation arrangements

15.— (1) Lifeboats and liferafts for which launching appliances are required shall be stowed as close to accommodation and service spaces as possible.

(2) Muster stations shall be provided close to the embarkation stations. Each muster station shall have sufficient space to accommodate all persons assigned to muster at that station. In ships of Classes I, II and IIA passenger muster stations shall permit ready access for the passengers to the embarkation stations unless in the same location, and shall have ample room for marshalling and instruction of the passengers.

(3) Muster and embarkation stations shall be readily accessible from accommodation and work areas.

(4) In ships of Classes I, II and II(A) and in ships of Clases VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T) and IX of 500 tons or over, muster and embarkation stations shall be adequately illuminated by lighting supplied from the emergency source of electrical power required by regulation 46(1) of the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 or regulation 45(1) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984, as appropriate.

(5) Alleyways, internal and external stairways and exits giving access to the muster and embarkation stations shall be lighted. In ships of the Classes referred to in paragraph (4) such lighting shall be capable of being supplied by the emergency source of electrical power required by regulation 46(1) of the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 or regulation 45(1) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984, as appropriate.

(6) Davit-launched survival craft muster and embarkation stations shall be so arranged as to enable stretcher cases to be placed in survival craft.

(7) In ships of Classes I, II, II(A), VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T), IX, XI and XII an embarkation ladder shall be provided at each launching station or at every two adjacent launching stations, extending, in a single length, from the deck to the waterline in the lightest seagoing condition under unfavourable conditions of trim and with the ship listed not less than 15° either way and where such distance exceeds 1 metre. Such ladders may be replaced by approved devices to afford access to survival craft when waterborne, provided that there shall be at least one embarkation ladder on each side of the ship. Handholds shall be provided to assist in a safe passage from the deck to the ladder and vice-versa. Other means of embarkation may be permitted for the liferafts required to be carried in compliance with regulations 7(5) and 8(8).

(8) Where necessary, means shall be provided for bringing davit-launched survival craft against the ship's side and holding them alongside so that persons can be safely embarked.

(9) On ships of Classes I, II and II(A) survival craft embarkation arrangements shall be so designed that:

(a) all lifeboats can be boarded and launched either directly from the stowed position or from an embarkation deck but not both;

(b) davit-launched liferafts can be boarded and launched from a position immediately adjacent to the stowed position or from a position to which, in compliance with the requirements of regulation 16(5), the liferaft is transferred prior to launching.

(10) On every ship provided with a rescue boat, arrangements shall be such that the rescue boat can be boarded and launched directly from the stowed position with the number of persons assigned to crew the rescue boat on board. Notwithstanding the requirements of sub-paragraph 9*(a)*, if the rescue boat is also a lifeboat and the other lifeboats are boarded and launched from an embarkation deck, the arrangements shall be such that the rescue boat can also be boarded and launched from the embarkation deck.

(11) On ships of Classes VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T), IX and XI survival craft embarkation arrangements shall be so designed that lifeboats can be boarded and launched directly from the stowed position and davit-launched liferafts can be boarded and launched from a position immediately adjacent to the stowed position or from a position to which the liferaft is transferred prior to launching in compliance with the requirements of regulation 16(5).

Stowage of survival craft, rescue boats and inflated boats

16.— (1) Each survival craft shall be stowed:

(a) so that neither the survival craft nor its stowage arrangements will interfere with the operation of any other survival craft or rescue boat at any other launching station;

(b) as near the water surface as is safe and practicable and, in the case of a survival craft other than a liferaft intended for throw-overboard

launching, in such a position that the survival craft in the embarkation position is not less than 2 metres above the waterline with the ship in the fully loaded condition under unfavourable conditions of trim and listed up to 20 degrees either way, or to the angle at which the ship's weatherdeck edge becomes submerged, whichever is less;

(c) in a state of continuous readiness so that two crew members can carry out preparations for embarkation and launching in less than 5 minutes;

(d) fully equipped as prescribed in Part I of Schedule 1 or Part IV of Schedule 4;

(e) as far as practicable, in a secure and sheltered position and protected from damage by fire and explosion.

(2) Lifeboats for lowering down the ship's side shall be stowed as far forward of the propeller as practicable. On ships of Classes VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T) and IX of 80 metres in length and upwards but less than 120 metres in length, each lifeboat shall be so stowed that the after end of the lifeboat is not less than the length of the lifeboat forward of the propeller. On such ships of 120 metres in length and upwards and on ships of Classes I, II and II(A) of 80 metres in length and upwards, each lifeboat shall be so stowed that the after end of the lifeboat is not less than 1.5 times the length of the lifeboat forward of the propeller. Where appropriate, the ship shall be so arranged that lifeboats, in their stowed positions, are protected from damage by heavy seas.

(3) Lifeboats shall be stowed attached to launching appliances.

(4) In addition to meeting the requirements of paragraph (7) or (8) liferafts shall be so stowed as to permit manual release from their securing arrangements.

(5) Davit-launched liferafts shall be stowed within reach of the lifting hooks, unless some means of transfer is provided which is not rendered inoperable within the limits of trim and list prescribed in sub-paragraph (1)*(b)* or by ship motion or power failure, provided that the liferafts required to be carried by regulation 5(2)*(c)* and regulation 6(4) need not be so stowed.

(6) Liferafts intended for throw-overboard launching shall be so stowed as to be readily transferable for launching on either side of the ship unless liferafts, of the aggregate capacity required by regulations 7(2)*(b)*, 8(4), 9(3)*(b)*(i), 9(3)*(c)*(i) and 10(2)*(a)*(i) to be capable of being launched on either side, are stowed on each side of the ship.

(7) On ships of Classes I, II and II(A) every liferaft shall be stowed with its painter permanently attached to the ship and with a float-free arrangement complying with the requirements of Part VI of Schedule 4 so that, as far as practicable, the liferaft floats free and, if inflatable, inflates automatically when the ship sinks.

(8) On ships of Classes VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T), IX, XI and XII every liferaft, other than the liferafts required by regulations 7(5) and 8(8) shall be stowed with its painter pemanently attached to the ship and with a float-free arrangement complying with the requirements of Part VI of Schedule 4 so that the liferaft floats free and, if inflatable, inflates automatically when the

ship sinks. The liferafts required by regulations 7(5) and 8(8) may be securely fastened with provision for manual release.

(9) Rescue boats shall be stowed:

(a) in a state of continuous readiness for launching in not more than 5 minutes;

(b) in a position suitable for launching and recovery;

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

(d) if it is also a lifeboat, in compliance with the requirements of this regulation for the stowage of lifeboats.

(10) Inflated boats shall be stowed:

(a) in a state of continuous readiness for launching in the shortest possible time;

(b) in a position suitable for launching and recovery; and

(c) so that neither the inflated boat nor its stowage arrangements will interfere with the operation of any survival craft at any other launching station.

Launching stations

17. Launching stations shall be in such positions as to ensure safe launching having particular regard to the clearance from the propeller and steeply overhanging portions of the hull with the object of ensuring that so far as practicable, survival craft, except survival craft specially designed for free-fall launching, can be launched down the straight side of the ship. If positioned forward survival craft shall be stowed abaft the collision bulkhead in a sheltered position, and the strength of the launching appliance shall be to the satisfaction of the Secretary of State.

Survival craft launching arrangements

18.— (1) Launching appliances complying with the requirements of Parts I and III of Schedule 6 shall be provided for all liferafts except:

(a) liferafts which are boarded from a position which is less than 4.5 metres above the waterline in the lightest seagoing condition and which either;

(i) have a mass of not more than 185 kg.; or

(ii) are stowed for launching directly from the stowed position under unfavourable conditions of trim of up to 10 degrees and with the ship listed not less than 20 degrees either way;

(b) liferafts having a mass of not more than 185 kg. and which are carried in excess of the survival craft for 200% of the total number of persons on board the ship; and

(c) the liferafts stowed as far forward or aft required by regulations 7(5) and 8(8);

provided that these exceptions shall not apply where it is otherwise expressly required that launching appliances shall be provided.

(2) Each lifeboat shall be provided with an appliance which is capable of launching and recovering the lifeboat.

(3) Only one type of release mechanism shall be used for similar survival craft carried on board the ship.

(4) On ships of Classes I, II and IIA all survival craft required to provide for abandonment by the total number of persons on board shall be capable of being launched with their full complement of persons and equipment within a period of 30 minutes from the time the abandon ship signal is given.

(5) On ships of Classes VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T), IX and XI, with the exception of the survival craft referred to in sub-paragraph (1)*(a)*, all survival craft required to provide for abandonment by the total number of persons on board shall be capable of being launched with their full complement of persons and equipment within a period of 10 minutes from the time the abandon ship signal is given.

(6) On ships of Classes VII, VII(T), VIII, VIII(T), VIII(A), VIII(A)(T), and IX of 20,000 tons and upwards, lifeboats shall be capable of being launched, where necessary utilizing painters, with the ship making headway at speeds up to 5 knots in calm water.

(7) Preparation and handling of survival craft at any one launching station shall not interfere with the prompt preparation and handling of any other survival craft or rescue boat at any other station.

(8) During preparation and launching, each survival craft, its launching appliance, and the area of water into which it is to be launched shall be adequately illuminated by lighting supplied from the emergency source of electrical power required by regulation 46(1) of the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 or regulation 45(1) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984, as appropriate.

(9) Means shall be available to prevent any discharge of water on to survival craft during abandonment.

(10) If there is a danger of a survival craft being damaged by the ship's stabiliser fins, means shall be available, powered by an emergency source of energy, to bring the stabiliser fins inboard. Indicators operated by an emergency source of energy shall be available on the navigating bridge to show the position of the stabiliser fins.

Marine Escape Systems

19.— (1) A marine escape system or systems complying with the requirements of Part I of Schedule 5 may be substituted on ships of Classes II and II(A) for some or all of the liferafts and launching appliances required by regulation 6(2)*(b)* or 6(3)*(b)*. The liferafts included in such system or systems shall together with any other liferafts served by launching appliances other than the liferafts

referred to in regulation 6(4) provide the same aggregate capacity as that required by regulation 6(2)*(b)* or 6(3)*(b)*.

(2) Where one or more marine escape systems are provided on a ship, at least all such systems on one side shall be subjected to a trial deployment after installation.

(3) Where such a marine escape system is provided, provision for training the crew in its use shall be made. Such provision shall include the arrangements specified in Part II of Schedule 5.

Rescue boat embarkation, launching and recovery arrangements

20.— (1) The rescue boat embarkation and launching arrangements shall be such that the rescue boat can be boarded and launched in the shortest possible time and in any case in not more than 5 minutes.

(2) If the rescue boat is one of the ship's survival craft, the embarkation arrangements and launching station shall comply with the requirements of regulations 15 and 17.

(3) Launching arrangements shall comply with the requirements of regulation 18 and rescue boat launching appliances shall comply with the requirements of Part I and II of Schedule 6. All rescue boats shall be capable of being launched, where necessary utilizing painters, with the ship making headway at speeds up to 5 knots in calm water.

(4) Rapid recovery of the rescue boat shall be possible when loaded with its full complement of persons and equipment. If the rescue boat is also a lifeboat, rapid recovery shall be possible when loaded with its lifeboat equipment, and the approved rescue boat complement or 6 persons whichever is the greater.

Stowage of lifebuoys

21.— (1) Lifebuoys shall be so distributed as to be readily available on both sides of the ship and as far as practicable on all open decks extending to the ship's side. At least one lifebuoy shall be placed in the vicinity of the stern.

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

(3) Except as otherwise provided one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline.

(4) Except as otherwise provided lifebuoys with lights and those with lights and smoke signals shall be equally distributed on both sides of the ship and shall not be the lifebuoys provided with lifelines.

Stowage of lifejackets

22.— (1) Lifejackets shall be so placed as to be readily accessible and their position shall be plainly indicated. Where due to the particular arrangements of the ship, lifejackets in remote positions may become inaccessible, the number of lifejackets carried shall be suitably increased.

(2) Lifejackets comprising the additional 5% provided on passenger ships of Classes, I, II and IIA shall be stowed in conspicuous places on deck or at muster stations.

Stowage of portable radio equipment

23. Portable radio equipment for survival craft required to be carried in compliance with regulations 5(6)*(a)*, 6(8)*(a)*, 7(9)*(a)* and 8(11)*(a)* shall be stowed in a protected and easily accessible position ready to be moved to any survival craft in an emergency, except that in the case of a ship with lifeboats stowed in widely separated positions fore and aft, portable radio equipment shall be stowed in the vicinity of the lifeboats which are furthest from the ship's main transmitter.

Stowage and packing of pyrotechnic distress signals

24.— (1) Pyrotechnic distress signals provided for use on board ship shall be stowed on or near the navigating bridge. In the case of a line-throwing appliance which includes a pistol, the pistol, line and rockets together with the means of ignition shall be stowed in a container which provides protection from the weather.

(2) All pyrotechnic distress signals provided for use on board ships or for use in a lifeboat shall be packed in a watertight container. Such signals and signals provided for use in liferafts shall not be packed in plastic envelopes.

Immersion suits

25. Immersion suits may be of the insulated or uninsulated type provided that immersion suits of the insulated type shall be carried on ships which make voyages:—

(a) north of latitude 65°N in the Atlantic Ocean;

(b) north of latitude 55°N in the Pacific Ocean;

(c) south of latitude 50°S, and

(d) east of longitude 10°E in the Kattegat and Baltic Sea between 1st December and 30th April, both dates inclusive.

Manning of survival craft

26.— (1) This regulation applies to ships of Classes I, II, II(A), VII, VII(T), VIII, VIII(T) and ships of Classes IX and XI engaged on international voyages.

(2) There shall be a sufficient number of crew members to operate the survival craft and launching arrangements required for abandonment by the total number of persons on board. The minimum number of deck officers, certificated persons and other crew members required to be carried shall be determined in accordance with Merchant Shipping Notice No. M 1207 or in any Merchant Shipping Notice amending or replacing it which is considered by the Secretary of State to be relevant from time to time.

(3) A deck officer or certificated person shall be placed in charge of each

lifeboat to be used. In addition a deck officer or certificated person shall be nominated second-in-command of such lifeboat.

(4) Except as otherwise provided in this paragraph a deck officer or certificated person shall be placed in charge of each liferaft to be used. In ships of Classes II and II(A) the person placed in charge of each liferaft may in lieu of a deck officer or certificated person be a crew member practised in the handling and operation of liferafts.

(5) The person in charge of a survival craft shall have a list of the survival craft crew and shall ensure that the crew under his command are acquainted with their duties. In lifeboats the second-in-command shall also have a list of the lifeboat crew.

(6) In ships carrying liferafts served by launching appliances a deck officer or certificated person shall be assigned to each launching appliance.

(7) In ships carrying liferafts not served by launching appliances a deck officer or certificated person shall be assigned to each launching position.

(8) A person capable of operating the engine and carrying out minor adjustments shall be assigned to every lifeboat.

(9) A person capable of operating a radiotelegraph installation shall be assigned to every lifeboat required to carry such equipment.

(10) There shall be a sufficient number of trained persons on board for mustering and assisting untrained persons.

(11) The master shall ensure the equitable distribution of persons referred to in paragraphs (2), (3), (4) and (10) of this regulation when compiling the muster list referred to in regulation 4(2) of the Merchant Shipping (Musters and Training) Regulations 1986(**a**).

Equivalents and exemptions

27.— (1) Where these Regulations require that a particular fitting, material, appliance or apparatus, or type thereof, shall be fitted or carried in a ship, or that any particular provision shall be made, the Secretary of State may permit any other fitting, material, appliance or apparatus or type thereof to be fitted or carried, or any other provision to be made in that ship if he is satisified by trial thereof or otherwise that such other fitting, material, appliance or apparatus, or type thereof, or provision is at least as effective as that required by these Regulations.

(2) The Secretary of State may exempt any ship not normally engaged on international voyages but which, in exceptional circumstances, is required to undertake a single international voyage from any of the requirements of these Regulations, provided that she complies with safety requirements which in his opinion are adequate for the voyage which is to be undertaken by the ship.

(3) The Secretary of State may exempt any ship or description of ships from

(**a**) S.I. 1986/1071.

all or any of the provisions of these Regulations (as may be specified in the exemption) if he is satisfied that compliance with such provision is either impracticable or unreasonable in the case of that ship or description of ships on such terms (if any) as he may specify and may, subject to giving reasonable notice, alter or cancel any such exemption.

Penalties

28.— (1) If a ship to which these Regulations apply proceeds on any voyage or excursion without complying with the requirements of these Regulations, the owner and master of the ship shall each be guilty of an offence and liable on summary conviction to a fine not exceeding £1000 or on conviction on indictment, to imprisonment for a term not exceeding two years and a fine.

(2) It shall be a good defence to a charge under this regulation to prove that the person charged took all reasonable steps to avoid commission of the offence.

Power to detain

29. In any case where a ship does not comply with the requirements of these Regulations, the ship shall be liable to be detained and section 692(1)–(3) of the Merchant Shipping Act 1894(**a**) (which relates to the detention of a ship) shall have effect in relation to the ship, subject to the modification that for the words "this Act" wherever they appear, there were substituted "the Merchant Shipping (Life-Saving Appliances) Regulations 1986".

John Moore,
Secretary of State for Transport.

25th June 1986.

(**a**) 1894 c.60.

Regulations 5, 6, 7, 8, 10, 11 and 16

SCHEDULE 1

REQUIREMENTS FOR LIFEBOATS

PART I

GENERAL (INCLUDING EQUIPMENT)

1. *Definitions*

1.1 In this Schedule the following definition applies:

.1 "Length of lifeboat" means the length of the lifeboat in metres from the inside of the shell at the top of the stem to the corresponding point at the top of the stern post; in the case of a lifeboat with a square stern the length is measured to the inside of the top of the transom.

2. *General*

2.1 All lifeboats prescribed in this Part shall:

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range −30°C to +65°C;

.3 be capable of operating throughout a seawater temperature range of −1°C to +30°C;

.4 be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 be of a highly visible colour on all parts where this will assist detection;

.7 be fitted with retro-reflective material where it will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 be capable of satisfactory operation in a sea environment.

3. *Construction*

3.1 All lifeboats shall be properly constructed and shall be of such form and proportions that they have ample stability in a seaway and sufficient freeboard when loaded with their full complement of persons and equipment. All lifeboats shall have rigid hulls and shall be capable of maintaining positive stability when in an upright position in calm water and loaded with their full complement of persons and equipment and holed in any one location below the waterline, assuming no loss of bouyancy material and no other damage.

3.2 All lifeboats shall be of sufficient strength to:

.1 enable them to be safely lowered into the water when loaded with their full complement of persons and equipment; and

.2 be capable of being launched and towed when the ship is making headway at a speed of 5 knots in calm water.

3.3 Hulls and rigid covers shall be fire-retardent or non-combustible.

3.4 Seating shall be provided on thwarts, benches or fixed chairs fitted as low as praticable in the lifeboat and constructed so as to be capable of supporting the number of persons each weighing 100 kg for which spaces are provided in compliance with the requirements of paragraph 3.9.

3.5 Each lifeboat shall be of sufficient strength to withstand a load, without residual deflection on removal of that load:

.1 in the case of boats with metal hulls, 1.25 times the total mass of the lifeboat when loaded with its full complement of persons and equipment; or

.2 in the case of other boats, twice the total mass of the lifeboat when loaded with its full complement of persons and equipment.

3.6 Each lifeboat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment and with, where applicable, skates or fenders in position, a lateral impact against the ship's side at an impact velocity of at least 3.5 metres per second and also a drop into the water from a height of at least 3 metres.

3.7 The vertical distance between the floor surface and the interior of the enclosure or canopy over 50% of the floor area shall be:

.1 not less than 1.3 metres for a lifeboat permitted to accommodate 9 persons or less;

.2 not less then 1.7 metres for a lifeboat permitted to accommodate 24 persons or more;

.3 not less than the distance as determined by linear interpolation between 1.3 metres and 1.7 metres for a lifeboat permitted to accommodate between 9 and 24 persons.

3.8 No lifeboat shall be deemed fit to accommodate more than 150 persons.

3.9 The number of persons which a lifeboat shall be permitted to accommodate shall be equal to the lesser of:

.1 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated in a normal position without interfering with the means of propulsion or the operation of any of the life boat's equipment; or

.2 the number of spaces that can be provided on the seating arrangements in accordance with Figure 1. The shapes may be overlapped as shown, provided footrests are fitted and there is sufficient room for legs, and the vertical separation between the upper and lower seat is not less than 350 mm.

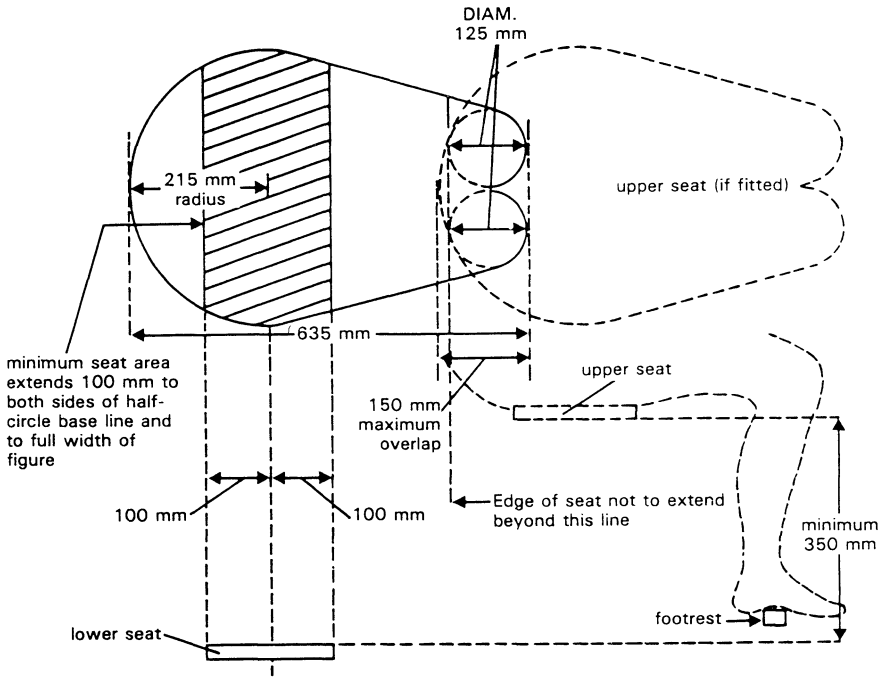

Figure 1

3.10 Each seating position shall be clearly indicated in the lifeboat.

3.11 Every passenger ship lifeboat shall be so arranged that it can be rapidly boarded by its full complement of persons. Rapid disembarkation shall also be possible.

3.12 Every cargo ship lifeboat shall be so arranged that it can be boarded by its full complement of persons in not more than 3 minutes from the time the instruction to board is given. Rapid disembarkation shall also be possible.

3.13 Lifeboats shall have a boarding ladder that can be used on either side of the lifeboat to enable persons in the water to board the lifeboat. The lowest step of the ladder shall be not less than 0.4 metres below the lifeboat's light waterline, and shall be weighted if of buoyant material.

3.14 The lifeboat shall be so arranged that helpless people can be brought on board either from the sea or on stretchers.

3.15 All surfaces on which persons might walk shall have a non-skid finish.

3.16 All lifeboats shall have inherent buoyancy or shall be fitted with inherently buoyant material which shall not be adversely affected by seawater, oil or oil products, sufficient to float the lifeboat with all its equipment on board when flooded and open to the sea. Additional inherently buoyant material, equal to 280 newtons of buoyant force per person shall be provided for the number of persons the lifeboat is permitted to accommodate. Buoyant material, unless in addition to that required above, shall not be installed externally to the hull of the lifeboat.

3.17 Every lifeboat, when loaded with 50% of the number of persons the lifeboat is permitted to accommodate seated in their normal positions to one side of the centerline, shall have a freeboard, measured from the waterline to the lowest opening through which the lifeboat may become flooded, of at least 1.5% of the lifeboat's length or 100 mm., whichever is the greater.

4. *Lifeboat propulsion*

4.1 Every lifeboat shall be powered by a compression ignition engine. No engine shall be used for any lifeboat if its fuel has a flashpoint of 43°C or less (closed cup test) and the engine shall:

.1 be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources. Any necessary starting aids shall also be provided. The engine starting systems and starting aids shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure unless, in the opinion of the Secretary of State having regard to the particular voyages in which the ship carrying the lifeboat is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, thwarts or other obstructions;

.2 be capable of operating for not less than 5 minutes after starting from cold with the lifeboat out of the water;

.3 be capable of operating when the lifeboat is flooded up to the centreline of the crankshaft;

.4 be capable of operating when the lifeboat is listed 10° either way or trimmed 10° either way.

4.2 Unless the propeller is arranged so as to avoid its rotation constituting a danger to people in the water adjacent to it, the drive arrangement between the prime mover and the propeller shall be such that the propeller can be brought to rest without stopping the prime mover. Provision shall be made for ahead and astern propulstion of the craft.

4.3 The exhaust pipe shall be so arranged as to prevent water from entering the engine in normal operation, and insulated as necessary.

4.4 All lifeboats shall be designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system by floating debris.

4.5 The speed of a lifeboat when proceeding ahead in calm water, when loaded with its full complement of persons and equipment and with all engine-powered auxiliary equipment in operation, shall be at least 6 knots and at least 2 knots when towing a 25-person liferaft loaded with its full complement of persons and equipment or its equivalent. Sufficient fuel, suitable for use throughout the temperature range expected in the area in which the ship operates, shall be provided to run the fully loaded lifeboat at 6 knots for a period of not less than 24 hours.

4.6 The lifeboat engine, transmission and engine accessories shall be enclosed in a fire-retardant casing or other suitable arrangements providing similar protection. Such arrangements shall also protect persons from coming into accidental contact with hot or moving parts and protect the engine from exposure to weather and sea. Adequate means shall be provided to reduce the engine noise. Starter batteries shall be provided with casings which form a watertight enclosure around the bottom and

sides of the batteries. The battery casings shall have a tight fitting top which provides for necessary gas venting.

4.7 The lifeboat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio life-saving applicances used in the lifeboat.

4.8 Means shall be provided for recharging all engine-starting, radio and searchlight batteries. Radio batteries shall not be used to provide power for engine starting. Means shall be provided for recharging lifeboat batteries from the ship's power supply. The electric power supply connection from the ship to any lifeboat shall be at a voltage of not exceeding 55 volts direct current or 55 volts root mean square alternating current and shall be capable of being disconnected automatically at the lifeboat embarkation station.

4.9 Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

5. *Lifeboat Fittings*

5.1 All lifeboats shall be provided with at least one drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the lifeboat is not waterborne and shall automatically close to prevent entry of water when the lifeboat is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be attached to the lifeboat by a lanyard, a chain, or other suitable means. Drain valves shall be readily accessible from inside the lifeboat and their position shall be clearly indicated.

5.2 All lifeboats shall be provided with a rudder and tiller or other suitable means of steering. When a wheel or other remote steering mechanism is also provided the alternative means shall be capable of steering the boat in the case of failure of the steering mechanism. Any rudder shall be permanently attached to the boat and any tiller shall be permanently installed on or linked to the rudder stock. However, if the boat has a remote steering mechanism the tiller may be removable and securely stowed near the rudder stock. The steering arrangements shall be so arranged so not to be damaged by operation of the release mechanism or the propeller.

5.3 Except in the vicinity of the rudder and propeller, a buoyant lifeline shall be becketed around the outside of the lifeboat.

5.4 Lifeboats which are not self-righting when capsized shall have suitable handholds on the underside of the hull to enable persons to cling to the lifeboat. The handholds shall be fastened to the lifeboat in such a way that, when subjected to an impact sufficient to cause them to break away from the lifeboat, they break away without damaging the lifeboat.

5.5 All lifeboats shall be fitted with sufficient watertight lockers or compartments to provide for the storage of the small items of equipment, water and provisions required by paragraph 7. Means shall be provided for the storage of collected rainwater.

5.6 Every lifeboat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part VII of this Schedule.

5.7 Every lifeboat shall be fitted with a release device to enable the forward painter to be released when under tension.

5.8 Every lifeboat shall be provided with a permanently installed earth connection and arrangements for adequately siting and securing in the operating position the antenna provided with the portable radio apparatus required by regulations 5(6)*(a)*, 6(8)*(a)*, 7(9)*(a)* and 8(11)*(a)*.

5.9 Lifeboats intended for launching down the side of a ship shall have skates and fenders as necessary to facilitate launching and prevent damage to the lifeboat.

5.10 A manually controlled lamp complying with the requirements of Part IX of this Schedule shall be fitted to the top of the cover or enclosure.

5.11 A lamp or source of light complying with the requirements of Part IX of this Schedule shall be fitted inside the lifeboat; however, oil lamps shall not be permitted for this purpose.

5.12 Unless expressly provided otherwise, every lifeboat shall be provided with effective means of bailing or be automatically self-bailing.

5.13 Every lifeboat shall be so arranged that an adequate view forward, aft and to both sides is provided from the control and steering position for safe launching and manoeuvring.

6. *Lifeboat markings*

6.1 The dimensions of the lifeboat, the number of persons which it is permitted to accommodate, the makers serial number, name or trade mark and the date of manufacture shall be marked on the lifeboat in clear permanent characters.

6.2 The name and port of registry of the ship to which the lifeboat belongs shall be marked on each side of the boat's bow in block capitals of the Roman alphabet.

6.3 Means of identifying the ship to which the lifeboat belongs and the number of the boat shall be marked in such a way that they are visible from above.

7. *Lifeboat equipment*

7.1 All items of lifeboat equipment, whether required by this paragraph or elsewhere in this Schedule, with the exception of boat-hooks which shall be kept available for fending off purposes, shall be secured within the lifeboat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements or other suitable means. The equipment shall be secured in such a manner as not to interfere with any abandonment procedures. All items of lifeboat equipment shall be as small and of as little mass as possible and shall be packed in a suitable and compact form. Except where otherwise stated, the normal equipment of every lifeboat shall consist of:

.1 sufficient buoyant oars to make headway in calm seas; thole pins, crutches or equivalent arrangements shall be provided for each oar provided; thole pins or crutches shall be attached to the boat by lanyards or chains;

.2 two boat-hooks;

.3 a buoyant bailer and two buckets;

.4 a survival manual;

.5 a binnacle containing an efficient compass complying with the requirements of Part V of Schedule 7 which is luminous or provided with suitable means of illumination; in a totally enclosed lifeboat, the binnacle shall be permanently fitted at the steering position; in any other lifeboat, it shall be provided with suitable mounting arrangements;

.6 a sea-anchor complying with the requirements of Part I of Schedule 7;

.7 two efficient painters of a length equal to not less than twice the distance from the stowage position of the lifeboat to the waterline in the lightest seagoing condition or 15 metres whichever is the greater; one painter attached to the release device required by paragraph 5.7 shall be placed at the forward end of the lifeboat and the other shall be stored at or near the bow of the lifeboat ready for use;

.8 two hatchets, one at each end of the lifeboat;

.9 watertight receptacles complying with the requirements of Part IV of Schedule 7 containing a total of 3 litres of fresh water for each person the lifeboat is permitted to accommodate, of which 1 litre per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in 2 days;

.10 three rustproof graduated drinking vessels, one suitably graduated in millilitres;

.11 food rations totalling not less than 10,000 kilojoules for each person the lifeboat is permitted to accommodate; these rations shall be kept in airtight packaging and be stowed in a watertight container;

.12 four rocket parachute flares;

.13 six hand flares;

.14 two buoyant smoke signals;

.15 one waterproof electric torch suitable for Morse signalling together with one spare set of batteries and one spare bulb in a waterproof container;

.16 one daylight signalling mirror with instructions for its use for signalling to ships and aircraft;

.17 one copy of the Department of Transport Rescue Signal Table published by Her Majesty's Stationery Office;

.18 one whistle or equivalent sound signal;

.19 a first-aid outfit complying with the requirements of Part II of Schedule 7;

.20 six doses of anti-seasickness medicine and one seasickness bag for each person;

.21 a jack-knife to be kept attached to the boat by a lanyard;

.22 three tin openers;

.23 two buoyant rescue quoits, attached to not less than 30 metres of buoyant line;

.24 a manual pump complying with the requirements of Part VIII of Schedule 1;

.25 one set of fishing tackle;

.26 sufficient tools for minor adjustments to the engine and its accessories;

.27 two portable fire-extinguishers suitable for extinguishing oil fires;

.28 a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 metres at a distance of 180 metres for a total period of 6 hours and of working for not less than 3 hours continuously;

.29 an efficient radar reflector;

.30 thermal protective aids sufficient for 10% of the number of persons the lifeboat is permitted to accommodate or two, whichever is the greater;

.31 in the case of ships engaged on voyages solely within the Limited European Area the items specified in paragraphs 7.1.11 and 7.1.25 need not be carried.

8. *Instructions and Information*

8.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the lifeboat and its equipment;

.2 installation arrangements;

.3 operational instructions including use of associated survival equipment;

.4 survival instructions;

.5 emergency repair instructions;

.6 deployment, boarding and launching instructions;

.7 method of launching from within the boat;

.8 release from launching applicance;

.9 on board maintenance requirements;

.10 servicing requirements;

.11 use of engine and accessories;

.12 recovery of boat including stowage and securing.

PART II Regulations 5 and 6

PARTIALLY ENCLOSED LIFEBOATS

1. All partially enclosed lifeboats shall comply with the requirements of Part I of this Schedule, and in addition shall comply with the requirements of this Part as follows:—

2. Every partially enclosed lifeboat shall be provided with effective means of bailing or be automatically self-bailing.

3. *Enclosure*

3.1 Permanently attached rigid covers shall be provided extending over not less than 20% of the length of the lifeboat from the stem and not less than 20% of the length of the lifeboat from the aftermost part of the lifeboat.

3.2 The rigid covers shall form two shelters. The interior height of the shelters shall be sufficient to permit persons easy access to their seats in the bow and stern of the lifeboat.

3.3 The rigid covers shall be so arranged that they include windows or translucent panels to admit sufficient daylight to the inside of the lifeboat with the openings or canopies closed so as to make artificial light unnecessary.

3.4 The rigid covers shall have railings to provide a secure handhold for persons moving about the exterior of the lifeboat.

3.5 Open parts of the lifeboat shall be fitted with a permanently attached foldable canopy so arranged that:

.1 it can be easily erected by not more than two persons;

.2 it is insulated to protect the occupants against cold by means of not less than two layers of material separated by an air gap or other equally efficient means; means shall be provided to prevent accumulation of water in the air gap.

3.6 The enclosure formed by the rigid covers and canopy shall be so arranged:

.1 as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

.2 that it has entrances at both ends and on each side, provided with efficient adjustable closing arrangements which can be easily and quickly opened and closed from inside or outside so as to permit ventilation but exclude seawater, wind and cold; means shall be provided for holding the entrances securely in the open and in the closed position;

.3 that with the canopy erected and all entrances closed, sufficient air is admitted for the occupants at all times;

.4 that it has means for collecting rainwater;

.5 that the exterior of the rigid covers and canopy and the interior of that part of the lifeboat covered by the canopy is of a highly visible colour. The interior of the shelters shall be of a colour which does not cause discomfort to the occupants;

.6 that it is possible to row the lifeboat.

4. The radiotelegraph installation required by regulation 5(6)*(a)* shall be installed in a cabin large enough to accommodate both the equipment and the person using it. No separate cabin is required if the construction of the lifeboat provides a sheltered space to the satisfaction of the Secretary of State.

PART III Regulations 5, 6 and 7

SELF-RIGHTING PARTIALLY ENCLOSED LIFEBOATS

1. All self-righting partially enclosed lifeboats shall comply with the requirements of Part I of this Schedule and in addition shall comply with the requirements of this Part as follows:—

2. *Enclosure*

2.1 Permanently attached rigid covers shall be provided extending over not less than 20% of the length of the lifeboat from the stem and not less than 20% of the length of the lifeboat from the aftermost part of the lifeboat.

2.2 The rigid covers shall form two shelters. If the shelters have bulkheads they shall have openings of sufficient size to permit easy access by persons each wearing an immersion suit or warm clothes and a lifejacket. The interior height of the shelters shall be sufficient to permit persons easy access to their seats in the bow and stern of the lifeboat.

2.3 The rigid covers shall be so arranged that they include windows or translucent panels to admit sufficient daylight to the inside of the lifeboat with the openings or canopies closed so as to make artificial light unnecessary.

2.4 The rigid covers shall have railings to provide a secure handhold for persons moving about the exterior of the lifeboat.

2.5 Open parts of the lifeboat shall be fitted with a permanently attached foldable canopy so arranged that:

.1 it can be easily erected by not more than two persons in not more than 2 minutes;

.2 it is insulated to protect the occupants against cold by means of not less than two layers of material separated by an air gap or other equally efficient means; means shall be provided to prevent accumulation of water in the air gap.

2.6 The enclosure formed by the rigid covers and canopy shall be so arranged:

.1 as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

.2 that it has entrances at both ends and on each side, provided with efficient adjustable closing arrangements which can be easily and quickly opened and closed from inside or outside so as to permit ventilation but exclude seawater, wind and cold; means shall be provided for holding the entrances securely in the open and in the closed position;

.3 that with the canopy erected and all entrances closed, sufficient air is admitted for the occupants at all times;

.4 that it has means for collecting rainwater;

.5 that the exterior of the rigid covers and canopy and the interior of that part of the lifeboat covered by the canopy is of a highly visibile colour. The interior of the shelters shall be of a colour which does not cause discomfort to the occupants;

.6 that it is possible to row the lifeboat.

3. *Capsizing and re-righting*

3.1 A four-point safety belt and head protection shall be fitted at each indicated seating position. The safety belt shall be so designed as to hold a person of a mass of 100 kg. securely in place when the lifeboat is in a capsized position.

3.2 The stability of the lifeboat shall be such that it is inherently or automatically self-righting when loaded with its full or a partial complement of persons and equipment and the persons are secured with safety belts.

4. *Propulsion*

4.1 The engine and transmission shall be controlled from the helmsman's position.

4.2 The engine and engine installation shall be capable of running in any position during capsize and continue to run after the lifeboat returns to the upright or shall automatically stop on capsizing and be easily restarted after the lifeboat returns to the upright and the water has been drained from the lifeboat. The design of the fuel and lubricating systems shall prevent the loss of fuel and the loss of more than 250 millilitres of lubricating oil from the engine during capsize.

4.3 Air-cooled engines shall have a duct system to take in cooling air from, and exhaust it to, the outside of the lifeboat. Manually operated dampers shall be provided to enable cooling air to be taken in from, and exhausted to, the interior of the lifeboat.

5. *Construction and fendering*

5.1 Notwithstanding the requirements of para 3.6 of Part I of this Schedule a self-righting partially enclosed lifeboat shall be so constructed and fendered as to ensure that the lifeboat renders protection against harmful accelerations resulting from an impact of the lifeboat, when loaded with its full complement of persons and equipment, against the ship's side at an impact velocity of not less than 3.5 metres per second.

5.2 The lifeboat shall be automatically self-bailing.

6. The radiotelegraph installation required by regulation 5(6)*(a)* shall be installed in a cabin large enough to accommodate both the equipment and the person using it. No separate cabin is required if the construction of the lifeboat provides a sheltered space to the satisfaction of the Secretary of State.

Regulations 5, 6 and 7 PART IV

TOTALLY ENCLOSED LIFEBOATS

1. All totally enclosed lifeboats shall comply with the requirements of Part I of this Schedule and in addition shall comply with the requirements of this Part as follows:—

2. *Enclosure*

2.1 Every totally enclosed lifeboat shall be provided with a rigid watertight enclosure which completely encloses the lifeboat.

2.2 The enclosure shall be so arranged that:

.1 it protects the occupants against heat and cold;

.2 access to the lifeboat is provided by hatches which can be closed to make the lifeboat watertight;

.3 hatches are positioned so as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

.4 access hatches are capable of being opened and closed from both inside and outside and are equipped with means to hold them securely in open positions;

.5 it is possible to row the lifeboat;

.6 it is capable, when the lifeboat is in the capsized position with the hatches closed and without significant leakage, of supporting the entire mass of the lifeboat, including all equipment, machinery and its full complement of persons;

.7 it includes windows or translucent panels on both sides which admit sufficient daylight to the inside of the lifeboat with the hatches closed to make artificial light unnecessary;

.8 its exterior is of a highly visible colour and its interior of a colour which does not cause discomfort to the occupants;

.9 handrails provide a secure handhold for persons moving about the exterior of the lifeboat, and aid embarkation and disembarkation;

.10 persons have access to their seats from an entrance without having to climb over thwarts or other obstructions;

.11 the occupants are protected from the effects of dangerous subatmospheric pressures which might be created by the lifeboat's engine.

3. *Capsizing and re-righting*

3.1 A four-point safety belt and head protection shall be fitted at each indicated seating position. The safety belt shall be designed to hold a person of a mass of 100 kg. securely in place when the lifeboat is in a capsized position.

3.2 The stability of the lifeboat shall be such that it is inherently or automatically self-righting when loaded with its full or a partial complement of persons and equipment and all entrances and openings are closed watertight and the persons are secured with safety belts.

3.3 The lifeboat shall be capable of supporting its full complement of persons and equipment when the lifeboat is in the damaged condition prescribed in paragraph 3.1 of Part I of this Schedule and its stability shall be such that in the event of capsizing, it will automatically attain a position that will provide an above-water escape for its occupants.

3.4 The design of all engine exhaust pipes, air ducts and other openings shall be such that water is excluded from the engine when the lifeboat capsizes and re-rights.

4. *Propulsion*

4.1 The engine and transmission shall be controlled from the helmsman's position.

4.2 The engine installation shall be capable of running in any position during capsize and continue to run after the lifeboat returns to the upright or shall automatically stop on capsizing and be easily restarted after the lifeboat returns to the upright. The design of the fuel and lubricating systems shall prevent the loss of fuel and the loss of more than 250 millilitres of lubricating oil from the engine during capsize.

4.3 Air-cooled engines shall have a duct system to take in cooling air from, and exhaust it to, the outside of the lifeboat. Manually operated dampers shall be provided to enable cooling air to be taken in from, and exhausted to, the interior of the lifeboat.

5. *Construction and fendering*

Notwithstanding the requirements of paragraph 3.6 of Part I of this Schedule a totally enclosed lifeboat shall be so constructed and fendered as to ensure that the lifeboat renders protection against harmful accelerations resulting from an impact of the lifeboat, when loaded with its full complement of persons and equipment, against the ship's side at an impact velocity of not less than 3.5 metres per second.

6. *Free-fall lifeboats*

A lifeboat arranged for free-fall launching shall be a totally enclosed lifeboat so constructed that it is capable of rendering protection against harmful accelerations resulting from being launched, when loaded with its full complement of persons and equipment, from at least the maximum height at which it is designed to be stowed above the waterline with the ship in the lightest seagoing condition, under unfavourable conditions of trim of up to 10° and with the ship listed not less than 20° either way.

Regulation 8

PART V

LIFEBOATS WITH A SELF-CONTAINED AIR SUPPORT SYSTEM

1. All lifeboats with a self-contained air support system shall comply with the requirements of Parts I and IV of this Schedule and in addition shall comply with the requirements of this Part as follows:—

2. Every lifeboat with a self-contained air support system shall be so arranged that, when proceeding with all entrances and openings closed, the air in the lifeboat remains safe and breathable and the engine runs normally for a period of not less than 10 minutes. During this period the atmospheric pressure inside the lifeboat shall never fall below the outside atmospheric pressure nor shall it exceed it by more than 20 millibar. The system shall have visual indicators to indicate the pessure of the air supply at all times.

PART VI Regulation 8

FIRE-PROTECTED LIFEBOATS

1. All fire-protected lifeboats in this Part shall comply with the requirements of Parts I, IV and V of this Schedule and in addition shall comply with the requirements of this Part as follows:—

2. Every fire-protected lifeboat when waterborne shall be capable of protecting the number of persons it is permitted to accommodate when subjected to a continuous oil fire that envelops the lifeboat for a period of not less than 8 minutes.

3. *Water spray system*

3.1 A lifeboat which has a water spray fire-protection system shall comply with the following:—

.1 water for the system shall be drawn from the sea by a self-priming motor pump. It shall be possible to turn "on" and turn "off" the flow of water over the exterior of the lifeboat;

.2 the seawater intake shall be so arranged as to prevent the intake of flammable liquids from the sea surface;

.3 the system shall be arranged for flushing with fresh water and allowing complete drainage.

PART VII Schedule 1, Part I

LIFEBOAT DISENGAGING GEARS

1. Except in the case of single point suspension the lifeboat disengaging gear shall be so arranged that all hooks are released simultaneously on the operation of the control mechanism.

2. The means of effecting release shall be placed near the coxswain's position.

3. The gear shall have two release capabilities:

.1 a normal release capability which will release the lifeboat only when it is waterborne or when there is no load on the hook(s);

.2 an on-load release capability which will release the lifeboat with a load on the hook(s). This release shall be so arranged as to release the lifeboat under any condition of loading from no-load with the lifeboat waterborne to a load of 1.1 times the total mass of the lifeboat when loaded with its full complement of persons and equipment. This release shall be adequately protected against accidental or premature use.

4. The means of connection between the hook(s), safety device and the operating lever or release unit shall:

.1 be arranged and led so as to ensure the efficient operation of the gear,

.2 wherever necessary be properly cased in for the safety or efficient action of the gear or for the protection of persons from injury, and

.3 where cased in, means shall be provided for lubricating this equipment.

5. The release control(s) are to be clearly marked in a colour that contrasts with its surroundings, and a suitably worded instruction plate indicating the method of safe operation of the gear shall be provided.

6. Such parts of the gear as would otherwise be likely to be set fast by rust or corrosion shall be made of non-corrodible metal.

7. The mechanism shall be designed with a factor of safety of 6 based on the ultimate strength of the materials used, assuming that the mass of the lifeboat is equally distributed.

Schedule 1, Part I

PART VIII

MANUAL PUMPS

1. Every lifeboat manual pump shall comply with the following requirements:—

.1 the capacity when operated at not more than 60 double strokes per minute at 1.2 metres suction head, shall be not less than:

.1 30 litres per minute in lifeboats of 7 metres in length or over; or

.2 20 litres per minute in lifeboats of less than 7 metres length;

.2 in its normal dry state (excluding internal grease or other assistance) the pump shall be readily self-priming when operated at a suction head of not less than 1.2 metres;

.3 all parts of the pump shall be of material unaffected by the corrosive effects of sea water;

.4 the interior of the pump, including valves, shall be readily accessible for emergency cleaning and the cover for access shall be capable of being easily removed without the use of a spanner or other special tool; and

.5 the pump branches shall be suitable for use with rubber hose connections of at least 30mm bore. The metal part of the operating handle shall be suitably sheathed by material other than wood to ensure that the hands of the operator are protected when the pump is used in extreme cold. The spindle gland shall be of the spring loaded seal ring type.

Schedule 1, Part I

PART IX

LIFEBOAT LIGHTS

1. *General*

1.1 Internal and External Lights

.1 The lights shall be provided with a manually operated switch.

.2 Each light shall be connected independently to its own power source unless it is operated from the lifeboat's battery system.

2. *Construction*

Internal and External Lights

.1 The complete light unit shall be constructed with proper workmanship and materials.

.2 It shall be capable of withstanding the drop test for a lifeboat.

.3 It shall be capable of withstanding a drop of 2 metres onto a rigidly mounted steel plate or concrete surface.

.4 It shall be rot proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal growth.

.5 It shall not deteriorate due to damp or humidity when stowed in or on a lifeboat.

.6 The power source shall be proofed against leakage of any chemicals which could damage or cause deterioration of the lifeboat.

.7 The connection between light and power shall be suitably protected.

.8 The lamp, lamp holder and lens shall be so constructed to prevent the ingress of water.

.9 If the external light is a flashing light, it shall not be fitted with a lens or curved reflector to concentrate the beam.

3. *Performance*

3.1 Internal and External Lights

.1 The lights shall have an operational endurance of not less than 12 hours.

.2 They shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.3 They shall operate in a satisfactory manner throughout a seawater temperature of −1°C to +30°C.

3.2 Internal Light

.1 The light shall be of sufficient luminous intensity to enable survival and equipment instructions to be read.

3.3 External Light

.1 The light shall be visible on a dark night with a clear atmosphere at a distance of at least 2 miles.

.2 It shall be visible through 360 degrees in a horizontal direction and over as great a segment of the upper hemisphere as is practical when attached to a lifeboat.

.3 In the case of a flashing light it shall flash at a rate of not less than 50 flashes per minute for the first 2 hours of operation.

.4 When fitted to a fire-protected lifeboat, the light should be arranged such that it is protected by the water spray system.

4. *Markings*

Internal and External Lights

4.1 The power source if independent of the lifeboat's battery system shall be marked externally with:—

.1 the manufacturer's name or trade mark;

.2 the type and batch number;

.3 date of manufacture and expiry;

.4 the words "DOT (UK) APPROVED".

4.2 If the power source is a chemical pressurised cell it shall be clearly marked with a suitable warning notice.

Regulations 2, 5, 6, 7, 8, 10, 11 and 16

SCHEDULE 2

REQUIREMENTS FOR RESCUE BOATS

PART I

RIGID RESCUE BOATS

1. *General*

1.1 A rigid rescue boat may be accepted as a lifeboat provided it also complies with the relevant requirements of Schedule 1.

1.2 All rigid rescue boats prescribed in this Part shall:

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range −30°C to +65°C;

.3 be capable of operating throughout the seawater temperature range −1°C to +30°C;

.4 be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 be of highly visible colour on all parts where this will assist detection;

.7 be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 be capable of satisfactory operation in a sea environment.

2. *Construction*

2.1 All boats shall be properly constructed and shall be of such form and proportions that they have ample stability in a seaway and sufficient freeboard when loaded with their full complement of persons and equipment. All boats shall have rigid hulls and shall be capable of maintaining positive stability when in an

upright position in calm water and loaded with their full complement of persons and equipment and holed in any one location below the waterline, assuming no loss of buoyancy material and no other damage.

2.2 All boats shall be of sufficient strength to:

.1 enable them to be safely lowered into the water when loaded with their full complement of persons and equipment; and

.2 be capable of being launched and towed when the ship is making headway at a speed of 5 knots in calm water.

2.3 Seating shall be provided on thwarts, benches or fixed chairs fitted as low as practicable in the boat and constructed so as to be capable of supporting the number of persons each weighing 100 kg. for which spaces are provided in compliance with the requirements of paragraph 2.5.2.

2.4 Each boat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment and with, where applicable, skates or fenders in position, a lateral impact against the ship's side at an impact velocity of at least 3.5 metres per second and also a drop into the water from a height of at least 3 metres.

2.5 The number of persons which a boat shall be permitted to accommodate shall be equal to the lesser of:

.1 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated in a normal position plus one person lying down without interfering with the means of propulsion or the operation of any of the boat's equipment; or

.2 the number of spaces that can be provided on the seating arrangements in accordance with Figure 2, plus one person lying down.

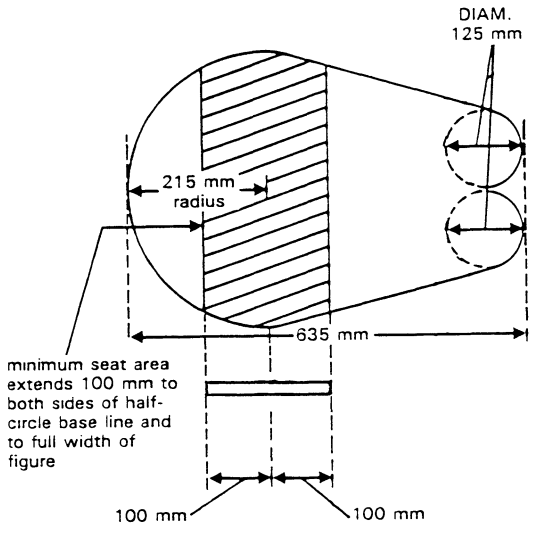

Figure 2

2.6 Each seating position shall be clearly indicated in the boat.

2.7 All boats shall have a boarding ladder that can be used on either side of the boat to enable persons in the water to board the boat. The lowest step of the ladder shall be weighted if of buoyant material and shall float at a level not less than 0.4 metres below the boat's light waterline.

2.8 The boat shall be so arranged that helpless people can be brought on board either from the sea or on stretchers.

2.9 All surfaces on which persons might walk shall have a non-skid finish.

2.10 All boats shall have inherent buoyancy or shall be fitted with inherently buoyant material which shall not be adversely affected by seawater, oil or oil products. Such buoyancy shall be sufficient to float the boat with all its equipment on board when flooded and open to the sea. Additional inherently buoyant material, equal to 280 newtons of buoyant force per person shall be provided for the number of persons the boat is permitted to accommodate. Buoyant material, unless in addition to that required above, shall not be installed external to the hull of the boat.

2.11 Every boat, when loaded with 50% of the number of persons the boat is permitted to accommodate seated in their normal positions to one side of the centreline, shall have a freeboard, measured from the waterline to the lowest opening through which the boat may become flooded, of at least 1.5% of the boat's length or 100 mm., whichever is the greater.

2.12 All boats shall:

.1 be not less than 3.8 metres and not more than 8.5 metres in length;

.2 be capable of carrying at least five seated persons and a person lying down.

2.13 Unless the boat has adequate sheer, it shall be provided with a bow cover extending for not less than 15% of its length.

2.14 All boats shall be capable of manoeuvring at speeds of at least 6 knots and maintaining a speed of 6 knots for a period of at least 4 hours.

2.15 All boats shall have sufficient mobility and manoeuvrability in a seaway to enable persons to be retrieved from the water, marshal liferafts and tow the largest liferaft carried on the ship when loaded with its full complement of persons and equipment or its equivalent at a speed of at least 2 knots.

2.16 The boat shall be fitted with an inboard or outboard engine complying with the relevant parts of paragraph 3.

2.17 Arrangements for towing shall be permanently fitted in rescue boats and shall be sufficiently strong to marshal or tow liferafts as required by paragraph 2.15.

2.18 All boats shall be fitted with weathertight stowage for small items of equipment.

2.19 Hulls and rigid covers if fitted shall be fire-retardant or non-combustible.

2.20 Each boat shall be of sufficient strength to withstand a load, without residual deflection on removal of that load;

.1 in the case of boats with metal hulls, 1.25 times the total mass of the boat when loaded with is full complement of persons and equipment; or

.2 in the case of other boats, twice the total mass of the boat when loaded with its full complement of persons and equipment.

2.21 All boats shall be fitted with a protective stowage cover and shall be kept covered at all times when the boat is not in use. The cover shall be arranged for quick removal in an emergency.

3. *Rigid rescue boat propulsion*

3.1 Inboard engine

.1 Where a boat is powered by an inboard engine it shall be of the compression ignition type. No engine shall be used for any boat if its fuel has a flashpoint of 43°C or less (Closed Cup Test) and the engine shall:

.1 be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources. Any necessary starting aids shall also be provided; the engine starting systems and starting aids shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure unless, in the opinion of the Secretary of State having regard to the particular voyages in which the ship carrying the boat is constantly engaged, a different temperature is appropriate; the starting systems shall not be impeded by the engine casing, thwarts or other obstructions;

.2 be capable of operating for not less than 5 minutes after starting from cold with the boat out of the water; and

.3 be capable of operating when the boat is flooded up to the centreline of the crank shaft.

3.2 Outboard Engine

.1 A petrol-driven outboard engine with an approved fuel system may be fitted to a boat provided the tank is specially protected against fire and explosion.

.2 A petrol engine shall be provided with either a manual starting system, or a power starting system. Any necessary starting aids shall also be provided. The engine starting systems and starting aids shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure unless, in the opinion of the Secretary of State having regard to the particular voyages in which the ship carrying the boat is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, thwarts or other obstructions.

3.3 Unless the propeller is so arranged so as to avoid its rotation constituting a danger to people in the water adjacent to it the drive arrangement between the prime mover and the propeller shall be such that the propeller can be brought to rest without stopping the prime mover. Provision shall be made for ahead and astern propulsion of the craft.

3.4 The exhaust pipe shall be so arranged as to prevent water from entering the engine in normal operation.

3.5 All boats shall be designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system by floating debris.

3.6 The boat engine, transmission and engine accessories shall be enclosed in a fire-retardant casing or other suitable arrangements providing similar protection. Such arrangements shall also protect persons from coming into accidental contact with hot or moving parts and protect the engine from exposure to weather and sea. Adequate means shall be provided to reduce the engine noise. Starter batteries shall be provided with casings which form a watertight enclosure around the bottom and sides of the batteries. The battery casings shall have a tight fitting top which provides for necessary gas venting.

3.7 The boat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio life-saving appliances used in the boat.

3.8 Means shall be provided for recharging all engine-starting, searchlight and, when fitted, radio batteries. Radio batteries shall not be used to provide power for engine starting. The electric power supply from the ship to any rigid rescue boat shall be at a voltage of not exceeding 55 volts direct current or 55 volts root mean square alternating current and shall be capable of being disconnected automatically at the rigid rescue boat embarkation station.

3.9 Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

4. *Boat fittings*

4.1 All boats shall be provided with at least one drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the boat is not waterborne and shall automatically close to prevent entry of water when the boat is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be attached to the boat by a lanyard, chain, or other suitable means. Drain valves shall be readily accessible and capable of being closed from inside the boat and their position shall be clearly indicated.

4.2 All boats shall be provided with a rudder and tiller or other suitable means of steering. When a wheel or other remote steering mechanism is also provided the alternative means shall be capable of steering the boat in the case of failure of the steering mechanism. Except where the rudder and tiller forms part of an outboard engine the rudder shall be permanently attached to the boat and the tiller shall be permanently installed on or linked to the rudder stock. However, if the boat has a remote steering mechanism the tiller may be removable and securely stowed near the rudder stock. The steering arrangements shall be so arranged as not to be damaged by operation of the release mechanism or the propeller.

4.3 Except in the vicinity of the rudder, propeller or outboard engine, a buoyant lifeline shall be becketed around the outside of the boat.

4.4 Boats which are not self-righting when capsized shall have suitable handholds on the underside of the hull to enable persons to cling to the boat. The handholds shall be fastened to the boat in such a way that, when subjected to an impact sufficient to cause them to break away from the boat, they break away without damaging the boat.

4.5 Every boat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part IV of this Schedule.

4.6 Every boat shall be fitted with a release device to enable the forward painter to be released when under tension.

4.7 Boats intended for launching down the side of a ship shall have skates and fenders as necessary to facilitate launching and prevent damage to the boat.

4.8 Unless expressly provided otherwise, every boat shall be provided with effective means of bailing or be automatically self-bailing.

5. *Markings*

5.1 The dimensions of the boat, the number of persons which it is permitted to accommodate, the maker's serial number, name or trade mark and the date of manufacture shall be marked on the boat in clear permanent characters.

5.2 The name and port of registry of the ship to which the boat belongs shall be marked on each side of the boat's bow in block capitals of the Roman alphabet.

5.3 Means of identifying the ship to which the boat belongs and the number of the boat shall be marked in such a way that they are visible from above.

6. *Boat equipment*

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

6.2 The equipment of every boat shall consist of:

.1 sufficient buoyant oars or paddles to make headway in calm seas; thole pins, crutches or equivalent arrangements shall be provided for each oar; thole pins or crutches shall be attached to the boat by lanyards or chains;

.2 a buoyant bailer;

.3 a binnacle containing an efficient compass complying with the requirements of Part V of Schedule 7 which is luminous or provided with suitable means of illumination;

.4 a sea-anchor complying with the requirements of Part I of Schedule 7;

.5 a painter of sufficient length and strength, attached to the release device complying with the requirements of paragraph 4.6 and placed at the forward end of the boat;

.6 one buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by paragraph 2.15;

.7 one waterproof electric torch suitable for Morse signalling, together with one spare set of batteries and one spare bulb in a waterproof container;

.8 one whistle or equivalent sound signal;

.9 a first-aid outfit complying with the requirements of Part II of Schedule 7 in a waterproof case capable of being closed tightly after use;

.10 two buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

.11 a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 metres at a distance of 180 metres for a total period of 6 hours and of working for at least 3 hours continuously;

.12 an efficient radar reflector;

.13 thermal protective aids sufficient for 10% of the number of persons the rescue boat is permitted to accommodate or two, whichever is the greater;

.14 a boat hook;

.15 a bucket;

.16 a knife or hatchet;

.17 a portable fire extinguisher.

7. *Instructions and Information*

7.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the boat and its equipment;

.2 installation arrangements;

.3 operational instructions including use of associated survival equipment;

.4 survival instructions;

.5 emergency repair instructions;

.6 deployment, boarding and launching instructions;

.7 method of launching from within the boat;

.8 release from launching appliance;

.9 on board maintenance requirements;

.10 servicing requirements;

.11 use of engine and accessories;

.12 recovery of boat including stowage and securing.

8. *Access into boats*

8.1 Every passenger ship rigid rescue boat shall be so arranged that it can be rapidly boarded by its rescue complement of persons. Rapid disembarkation shall also be possible.

8.2 Every cargo ship rigid rescue boat shall be so arranged that it can be boarded by its rescue complement of persons in not more than 3 minutes from the time the instruction to board is given. Rapid disembarkation shall also be possible.

PART II Regulations 2, 5, 6, 7, 8, 10, 11 and 16

RIGID INFLATED RESCUE BOATS

1. *General*

1.1 A rigid inflated rescue boat is a composite craft combining a rigid lower hull and inflated tubes fitted at the edge of the lower hull forming a watertight boundary.

1.2 All rigid inflated rescue boats shall comply with all the requirements of Part I of this Schedule with the exception of paragraphs 1.1 and 2.10.

2. *Construction*

2.1 The buoyancy of the boat shall be a combination of inherent and inflated buoyancy.

2.2 The inflated buoyancy tube shall be a single tube sub-divided into at least five separate compartments of approximately equal volume.

2.3 All boats shall have adequate inherent buoyancy or inherently buoyant material together with the inflatable compartments on one side (excluding the forward compartment) when inflated, sufficient to float the boat with all its equipment on board when flooded and open to the sea.

2.4 Additional inherent buoyancy equal to 140 newtons of buoyancy force per person shall be provided for the number of persons the boat is permitted to accommodate. This additional buoyancy shall not be installed externally to the rigid hull of the boat.

2.5 Inherently buoyant material shall not be adversely affected by seawater, oil or oil products.

2.6 The inflated buoyancy tubes shall comply with the requirements of paragraphs 2.19, 2.21 and 2.22 of Part III of this schedule.

2.7 The inflated buoyancy tubes shall be maintained at all times in a fully inflated condition.

3. *Markings*

3.1 If any of the markings required by paragraph 5 of Part I of this schedule are marked on the buoyancy tubes, the materials used to mark them shall be of a type which is compatible with the boats' coated fabric and approved by the boat manufacturer.

4. *Equipment*

In addition to the equipment required by paragraph 6.2 of Part I of this schedule the following items are required:

.1 an efficient manually operated bellows or pump; and

.2 a repair kit in a suitable container for repairing punctures to the coated fabric of the buoyancy tubes.

Regulations 2, 5, 6, 7, 8, 10, 11 and 16

PART III

INFLATED RESCUE BOATS

1. *General*

1.1 An inflated rescue boat is a craft combining a flexible lower hull and inflated tubes fitted at the edge of the lower hull together forming a watertight boundary and which relies solely on the buoyancy of the inflated tubes as the inherent buoyancy of the craft.

1.2 All inflated rescue boats prescribed in this Part shall:

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range −30°C to +65°C;

.3 be capable of operating throughout a seawater temperature range of −1°C to +30°C;

.4 be rot-proof, corrosion-resistance, and not be unduly affected by seawater, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 be of a highly visible colour on all parts where this will assist detection;

.7 be fitted with retro-reflective material where it will assist in detection, and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 be capable of satisfactory operation in a sea environment.

2. *Construction*

2.1 All boats shall be properly constructed and shall be of such form and proportion that they have ample stability in a seaway and sufficient freeboard when loaded with their full complement of persons and equipment. All boats shall be capable of maintaining positive stability in an upright position in calm water when loaded with their full complement of persons and equipment and fully swamped.

2.2 All boats shall be of sufficient strength to:

.1 enable them to be safely lowered into the water when loaded with their full complement of persons and equipment; and

.2 be capable of being launched and towed when the ship is making headway at a speed of 5 knots in calm water.

2.3 Seating shall be provided on thwarts, benches or fixed chairs fitted as low as practicable in the boat and constructed so as to be capable of supporting the number of persons each weighing 100 kg. for which spaces are provided in compliance with the requirements of paragraph 2.5.2.

2.4 Each boat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment and with, where applicable, skates or

fenders in position, a lateral impact against the ship's side at an impact velocity of at least 3.5 metres per second and also a drop into the water from a height of at least 3 metres.

2.5 The number of persons which a boat shall be permitted to accommodate shall be equal to the lesser of:

.1 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated in a normal position plus one person lying down without interfering with the means of propulsion or the operation of any of the boat's equipment; or

.2 the number of spaces that can be provided on the seating arrangements in accordance with Figure 2 plus one person lying down.

2.6 Each seating position shall be clearly indicated in the boat.

2.7 All boats shall have a boarding ladder that can be used on either side of the boat to enable persons in the water to board the boat. The lowest step of the ladder shall be weighted and float at a level not less than 0.4 metres below the boat's light waterline.

2.8 The boat shall be so arranged that helpless people can be brought on board either from the sea or on stretchers.

2.9 All surfaces on which persons might walk shall have a non-skid finish.

2.10 All boats, when loaded with 50% of the number of persons the boat is permitted to accommodate seated in their normal positions to one side of the centreline, shall have a freeboard, measured from the waterline to the lowest opening through which the boat may become flooded, of at least 1.5% of the boat's length or 100mm, whichever is the greater.

2.11 All boats shall:

.1 be not less than 3.8 metres and not more than 8.5 metres is length;

.2 be capable of carrying at least five seated persons and a person lying down.

2.12 Unless the boat has adequate sheer, it shall be provided with a bow cover of highly visible colour extending for not less than 15% of its length, and shall be angled upwards to deflect water and spray.

2.13 Boats shall be capable of manoeuvring at speeds of at least 6 knots and maintaining a speed of 6 knots for a period of at least 4 hours.

2.14 Boats shall have sufficient mobility and manoeuvrability in a seaway to enable persons to be retrieved from the water, marshal liferafts and tow the largest liferaft carried on the ship, when loaded with is full complement of persons and equipment, or its equivalent, at a speed of at least 2 knots.

2.15 The boat shall be fitted with an inboard or outboard engine complying with the relevant parts of paragraph 3.

2.16 Arrangements for towing shall be permanently fitted in boats and shall be sufficiently strong to marshal or tow liferafts as required by paragraph 2.14.

2.17 All boats shall be fitted with weathertight stowage for small items of equipment.

2.18 An inflated rescue boat shall be constructed in such a way that, when suspended by is bridle or lifting hook:

.1 it is of sufficient strength and rigidity to enable it to be lowered and recovered with its full complement of persons and equipment;

.2 it is of sufficient strength to withstand a load of 1.1 times the mass of its full complement of persons and equipment at an ambient temperature of −30°C with all relief valves operative;

.3 it is of sufficient strength to withstand a load of 4 times the mass of its full complement of persons and equipment at an ambient temperature of 20 ± 3°C with all relief valves inoperative.

2.19 Inflated rescue boats shall be so constructed as to be capable of withstanding exposure:

.1 when stowed on an open deck on a ship at sea;

.2 for 30 days afloat in all sea conditions.

2.20 The buoyancy of an inflated rescue boat shall be provided by either a single tube subdivided into at least five separate compartments of approximately equal volume or two separate tubes neither exceeding 60% of the total volume. The buoyancy tubes shall be so arranged that, in the event of any one of the compartments being damaged, the intact compartments shall be able to support, with positive freeboard over the boat's entire periphery, the number of persons which the boat is permitted to accommodate, each having a mass of 75 kg., and seated in their normal positions.

2.21 The buoyancy tubes forming the boundary of the inflated rescue boat shall on inflation provide a volume of not less than $0.17m^3$ for each person the rescue boat is permitted to accommodate and the diameter of the main buoyancy chamber must be at least 0.43 metres.

2.22 Each buoyancy compartment shall be fitted with a non-return valve for manual inflation and means for deflation. A safety relief valve shall also be fitted to each buoyancy compartment.

2.23 When inverted in the water a boat shall be capable of being righted by not more than 2 persons.

2.24 Rubbing strips shall be provided underneath the bottom and on vulnerable places on the outside of the inflated, rescue boat.

2.25 Where a transom is fitted it shall not be inset by more than 20% of the overall length of the inflated rescue boat.

2.26 Suitable patches shall be provided for securing painters forward and aft and becketed lifelines inside and outside the boat.

2.27 The inflated rescue boat shall be maintained at all times in a fully inflated condition.

2.28 All boats shall be fitted with a protective stowage cover and shall be

kept covered at all times when the boat is not in use. The cover shall be arranged for quick removal in an emergency.

3. *Inflated rescue boat propulsion*

3.1 Inboard Engine

.1 Where a boat is powered by an inboard engine it shall be of the compression ignition type. No engine shall be used for any boat if its fuel has a flashpoint of 43°C or less (Closed Cup Test), and the engine shall:

.1.1 be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources. Any necessary starting aids shall also be provided; the engine starting systems and starting aids shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure unless, in the opinion of the Secretary of State having regard to the particular voyages in which the ship carrying the boat is constantly engaged, a different temperature is appropriate; the starting systems shall not be impeded by the engine casing, thwarts or other obstructions;

.1.2 be capable of operating for not less than 5 minutes after starting from cold with the boat out of the water;

.1.3 be capable of operating when the boat is flooded up to the centreline of the crank shaft.

3.2 Outboard Engine

.1 Petrol-driven outboard engines with an approved fuel system may be fitted to boats provided the tanks are specially protected against fire and explosion.

.2 A petrol engine shall be provided with either a manual starting system, or a power starting system. Any necessary starting aids shall also be provided. The engine starting systems and starting aids shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure unless, in the opinion of the Secretary of State having regard to the particular voyages in which the ship carrying the boat is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, thwarts or other obstructions.

3.3 Unless the propeller is so arranged so as to avoid its rotation constituting a danger to people in the water adjacent to it the drive arrangement between the prime mover and the propeller shall be such that the propeller can be brought to rest without stopping the prime mover. Provision shall be made for ahead and astern propulsion of the craft.

3.4 The exhaust pipe shall be so arranged as to prevent water from entering the engine in normal operation.

3.5 All boats shall be designed with due regard to the safety of persons in the water and to the possibility of damage to the propulsion system by floating debris.

3.6 The boat engine, transmission and engine accessories shall be enclosed in a fire-retardant casing or other suitable arrangements providing similar

protection. Such arrangements shall also protect persons from coming into accidental contact with hot or moving parts and protect the engine from exposure to weather and sea. Adequate means shall be provided to reduce the engine noise. Starter batteries shall be provided with casings which form a watertight enclosure around the bottom and sides of the batteries. The battery casings shall have a tight fitting top which provides for necessary gas venting.

3.7 The boat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio life-saving appliances used in the boat.

3.8 Means shall be provided for recharging all engine-starting, searchlight and, when fitted, radio batteries. Radio batteries shall not be used to provide power for engine starting. Means shall be provided for recharging rescue boat batteries from the ship's power supply. The electric power supply connection from the ship to any inflated rescue boat shall be at a voltage of not exceeding 55 volts direct current or 55 volts root mean square alternating current and shall be capable of being disconnected automatically at the inflated rescue boat embarkation station.

3.9 Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

4. *Boat Fittings*

4.1 All boats shall be provided with at least one drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the boat is not waterborne and shall automatically close to prevent entry of water when the boat is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be readily attached to the boat by a lanyard, chain, or other suitable means. Drain valves shall be accessible and capable of being closed from inside the boat and their position shall be clearly indicated.

4.2 All boats shall be provided with a rudder and tiller or other suitable means of steering. When a wheel or other remote steering mechanism is also provided the alternative means shall be capable of steering the boat in the case of failure of the steering mechanism. Except where the rudder forms part of an outboard engine a rudder shall be permanently attached to the boat and a tiller shall be permanently installed on or linked to the rudder stock. However, if the boat has a remote steering mechanism the tiller may be removable and securely stowed near the rudder stock. The steering arrangements shall be so arranged so not to be damaged by operation of the release mechanism or the propeller.

4.3 Except in the vicinity of the rudder and propeller, a buoyant lifeline shall be becketed around the inside and outside of the boat.

4.4 Boats which are not self-righting when capsized shall have suitable handholds on the underside of the hull to enable persons to cling to the boat. The handholds shall be fastened to the boat in such a way that, when subjected to an impact sufficient to cause them to break away from the boat, they break away without damaging the boat.

4.5 Every boat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part IV of this Schedule.

4.6 Every boat shall be fitted with a release device to enable the forward painter to be released when under tension.

4.7 Boats intended for launching down the side of a ship shall have skates and fenders as necessary to facilitate launching and prevent damage to the boat.

4.8 Unless expressly provided otherwise, every boat shall be provided with effective means of bailing or be automatically self-bailing.

5. *Markings*

5.1 The dimensions of the boat, the number of persons which it is permitted to accommodate, the makers serial number, name or trade mark and the date of manufacture shall be marked on the boat in clear permanent characters.

5.2 The name and port of registry of the ship to which the boat belongs shall be marked on each side of the boat's bow in block capitals of the Roman alphabet.

5.3 Means of identifying the ship to which the boat belongs and the number of the boat shall be marked in such a way that they are visible from above.

5.4 All materials used to mark an inflated rescue boat shall be of a type which is compatible with the boats' coated fabric and approved by the boat manufacturer.

6. *Boat equipment*

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

6.2 The equipment of every boat shall consist of:

.1 sufficient buoyant oars or paddles to make headway in calm seas; thole pins, crutches or equivalent arrangements shall be provided for each oar; thole pins or crutches shall be attached to the boat by lanyards or chains;

.2 a buoyant bailer;

.3 a binnacle containing an efficient compass complying with the requirements of Part V of Schedule 7 which is luminous or provided with suitable means of illumination;

.4 a sea-anchor complying with the requirements of Part 1 of Schedule 7;

.5 a painter of sufficient length and strength, attached to the release device complying with the requirements of paragraph 4.6 and placed at the forward end of the boat;

.6 one buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by paragraph 2.14;

.7 one waterproof electric torch suitable for Morse signalling, together with one spare set of batteries and one spare bulb in a waterproof container;

.8 one whistle or equivalent sound signal;

.9 a first-aid outfit complying with the requirements of Part II of Schedule 7 in a waterproof case capable of being closed tightly after use;

.10 two buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

.11 a searchlight capable of effectively illuminating a light-coloured object at night having a width of 18 metres at a distance of 180 metres for a total period of 6 hours and of working for at least 3 hours continuously;

.12 an efficient radar reflector;

.13 thermal protective aids sufficient for 10% of the number of persons the boat is permitted to accommodate or two, whichever is the greater;

.14 a buoyant safety knife;

.15 two sponges;

.16 an efficient manually operated bellows or pump;

.17 a repair kit in a suitable container for repairing punctures;

.18 a safety boat hook;

.19 a portable fire extinguisher.

7. *Instructions and Information*

.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the Instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the boat and its equipment;

.2 installation arrangements;

.3 operational instructions including use of associated survival equipment;

.4 survival instructions;

.5 emergency repair instructions;

.6 deployment, boarding and launching instructions;

.7 method of launching from within the boat;

.8 release from launching appliance;

.9 on board maintenance requirements;

.10 servicing requirements;

.11 use of engine and accessories;

.12 recovery of boat including stowage and securing.

8. *Access into boats*

8.1 Every passenger ship inflated rescue boat shall be so arranged that it can be rapidly boarded by its rescue complement of persons. Rapid disembarkation shall also be possible.

8.2 Every cargo ship inflated rescue boat shall be so arranged that it can be boarded by its rescue complement of persons in not more than 3 minutes from the time the instruction to board is given. Rapid disembarkation shall also be possible.

PART IV Schedule 2. Parts I, II and III

RESCUE BOAT DISENGAGING GEARS

1. Except in the case of single point suspension the rescue boat disengaging gear shall be so arranged that all hooks are released simultaneously on the operation of the control mechanism.

2. The means of effecting release shall be placed near the coxwain's position.

3. The gear shall have two release capabilities:

.1 a normal release capability which will release the rescue boat only when it is waterborne or when there is no load on the hook(s);

.2 an on-load release capability which will release the rescue boat with a load on the hook(s). This release shall be so arranged as to release the rescue boat under any condition of loading from no-load with the rescue boat waterborne to a load of 1.1 times the total mass of the rescue boat when loaded with its full certified complement of persons and equipment. This release shall be adequately protected against accidental or premature use.

4. The means of connection between the hook(s), safety device and the operating lever or release unit shall:

.1 be arranged and led so as to ensure the efficient operation of the gear;

.2 wherever necessary be properly cased in for the safety or efficient action of the gear or for the protection of persons from injury; and

.3 where cased in, means shall be provided for lubricating this equipment.

5. The release control(s) are to be clearly marked in a colour that contrasts with its surroundings, and a suitably worded instruction plate indicating the method of safe operation of the gear shall be provided.

6. Such parts of the gear as would otherwise be likely to be set fast by rust or corrosion shall be made of non-corrodible metal.

7. The mechanism shall be designed with a factor of safety of 6 based on the ultimate strength of the materials used, assuming that the mass of the rescue boat is equally distributed.

Regulations 2, 7, 8 10, 11 and 16

SCHEDULE 3

INFLATED BOATS

1. *General*

1.1 An inflated boat is a composite craft combining a flexible lower hull and an inflated tube fitted at the edge of the lower hull together forming a watertight boundary and which relies solely on the buoyancy of the inflated tube as the inherent buoyancy of the craft.

1.2 All inflated boats prescribed in this Schedule shall:

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range −30°C to +65°C;

.3 be capable of operating throughout a seawater temperature range of −1°C to +30°C;

.4 be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 be of a highly visible colour on all parts where this will assist detection;

.7 be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 be capable of satisfactory operation in a sea environment.

2. *Construction*

2.1 All boats shall be properly constructed and shall be of such form and proportion that they have ample stability in a seaway and sufficient freeboard when loaded with their full complement of persons and equipment. All boats shall be capable of maintaining positive stability in an upright position in calm water when loaded with their full complement of persons and equipment and fully swamped.

2.2 All boats shall be of sufficient strength to enable them to be safely lowered into the water when loaded with all their equipment and a crew of 2 persons.

2.3 At least one portable thwart shall be fitted to enable the boat to be rowed satisfactorily.

2.4 Each boat shall be of sufficient strength to withstand, when loaded with its full complement of persons and equipment and with, where applicable, skates or fenders in position, a lateral impact against the ship's side at an impact velocity of at least 3.5 metres/second and also a drop into the water from a height of at least 3 metres.

2.5 The number of persons which a boat shall be permitted to accommodate shall be equal to the lesser of:

.1 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated in a normal position plus one person lying down; all persons must be seated inboard of the buoyancy tubes and shall not interfere with the means of propulsion or the operation of any of the boat's equipment; or

.2 the number of spaces that can be provided on the seating arrangements in accordance with Figure 2 in Part I of Schedule 2 plus one person lying down.

2.6 Each seating position shall be clearly indicated in the boat.

2.7 All boats shall have a boarding ladder that can be used on either side of the boat to enable persons in the water to board the boat. The lowest step of the ladder shall be weighted and float at a level not less than 0.4m below the boat's light waterline.

2.8 The boat shall be so arranged that helpless people can be brought on board either from the sea or on stretchers.

2.9 All surfaces on which persons might walk shall have a non-skid finish.

2.10 All inflated boats, when loaded with 50% of the number of persons the boat is permitted to accommodate seated in their normal positions to one side of the centreline, shall have a freeboard, measured from the waterline to the lowest opening through which the boat may become flooded, of at least 1.5% of the boat's length or 100mm, whichever is the greater.

2.11 An inflated boat shall:

.1 be not less than 3.8m and not more than 8.5m. in length; and

.2 be capable of carrying at least three persons and a person lying down.

2.12 Unless the boat has adequate sheer, it shall be provided with a bow cover of highly visible colour extending for not less than 15% of its length, and shall be angled upwards to deflect water and spray.

2.13 Boats shall be capable of manoeuvring at speeds of at least 6 knots in calm water with 2 persons on board, and maintaining a speed of 6 knots for a period of at least 2 hrs.

2.14 Boats shall have sufficient mobility and manoeuvrability in a seaway to enable persons to be retrieved from the water, marshal liferafts, and tow the largest liferaft carried on the ship when loaded with its full complement of persons and equipment, or its equivalent, at a speed of at least 2 knots.

2.15 The boat shall be fitted with an outboard engine having a maximum power of 10HP complying with the requirements of paragraph 3.

2.16 Arrangements for towing shall be permanently fitted in boats and shall be sufficiently strong to marshal or tow liferafts as required by paragraph 2.14.

2.17 Boats shall be fitted with weathertight stowage for small items of equipment.

2.18 A boat shall be constructed in such a way that, when suspended by its bridle or lifting hook;

.1 it is of sufficient strength and rigidity to enable it to be lowered and recovered with all its equipment and a crew of two persons;

.2 it is of sufficient strength to withstand a load of 1.1 times the mass of its equipment and a crew of two persons at an ambient temperature of −30°C with all relief valves operative;

.3 it is of sufficient strength to withstand a load of 4 times the mass of its equipment and a crew of two persons at an ambient temperature of 20 ± 3°C with all relief valves inoperative.

2.19 Inflated boats shall be constructed as to be capable of withstanding exposure:

.1 when stowed on an open deck on a ship at sea;

.2 for 30 days afloat in all sea conditions.

2.20 The buoyancy of an inflated boat shall be provided by either a single tube subdivided into at least five separate compartments of approximately equal volume or two separate tubes neither exceeding 60% of the total volume. The buoyancy tubes shall be so arranged that, in the event of any one of the compartments being damaged, the intact compartments shall be able to support, with positive freeboard over the boat's entire periphery, the number of persons which the inflated boat is permitted to accommodate, each having a mass of 75 kg., and seated in their normal positions.

2.21 The buoyancy tubes forming the boundary of the inflated boat shall on inflation provide a volume of not less than $0.17m^3$ for each person the boat is permitted to accommodate, and the diameter of the main buoyancy chamber must be at least 0.43 metres.

2.22 Each buoyancy compartment shall be fitted with a non-return valve for manual inflation and means for deflation. A safety relief valve designed to operate at a pressure not exceeding 125% of the designed working pressure of the buoyancy chamber shall also be fitted to each buoyancy compartment.

2.23 When inverted in the water an inflated boat shall be capable of being righted by not more than two persons.

2.24 Rubbing strips shall be provided underneath the bottom and on vulnerable places on the outside of the boat.

2.25 Where a transom is fitted it shall not be inset by more than 20% of the overall length of the inflated boat.

2.26 Suitable patches shall be provided for securing painters forward and aft and becketed lifelines inside and outside the boat.

2.27 The boat shall be maintained at all times in a fully inflated condition.

2.28 All inflated boats shall be fitted with a protective stowage cover and shall be kept covered at all times when the boat is not in use. The cover should be arranged for quick removal in an emergency.

3. *Boat Propulsion*

3.1 A petrol-driven outboard engine with an approved fuel system may be fitted to an inflated boat provided the tank is specially protected against fire and explosion.

3.2 A petrol engine shall be provided with a manual starting system. The engine starting system shall start the engine at an ambient temperature of −15°C within 2 minutes of commencing the start procedure. The starting system shall not be impeded by the engine casing, thwarts or other obstructions.

3.3 Unless the propeller is so arranged so as to avoid its rotation constituting a danger to people in the water adjacent to it the drive arrangement between the prime mover and the propeller shall be such that the propeller can be brought to rest without stopping the prime mover. Provision shall be made for ahead and astern propulsion of the boat.

3.4 The exhaust pipe shall be so arranged as to prevent water from entering the engine in normal operation.

3.5 The boat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio life-saving appliances used in the boat.

3.6 Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

4. *Boat Fittings*

4.1 All boats shall be provided with at least one drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the boat is not waterborne and shall automatically close to prevent entry of water when the boat is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be attached to the boat by a lanyard, a chain, or other suitable means. Drain valves shall be readily accessible and capable of being closed from inside the boat and their position shall be clearly indicated.

4.2 Except in the vicinity of the outboard engine, a buoyant lifeline shall be becketed around the inside and outside of the boat.

4.3 Boats which are not self-righting when capsized shall have suitable handholds on the underside of the hull to enable persons to cling to the boat. The handholds shall be fastened to the boat in such a way that, when subjected to an impact sufficient to cause them to break away from the boat, they break away without damaging the boat.

4.4 A boat shall be capable of being launched by means of a launching appliance complying with the requirements of Part IV of Schedule 6.

4.5 Unless expressly provided otherwise, every boat shall be provided with effective means of bailing or be automatically self-bailing.

5. *Lifting Arrangements*

5.1 Bridle slinging arrangements shall be fitted to enable the boat to be lowered or raised from the water. The bridle sling shall comprise at least four legs which should be joined at the top in the form of an eye or be connected to a lifting ring or shackle. The arrangement shall be such that the boat is stable when suspended and either:—

.1 the length of the legs are of equal length; or

.2 the bridle is permanently attached; or

.3 it is not possible to connect any of the bridle legs to the wrong position in the boat.

5.2 The bridle shall be manufactured of a material which will not adversely affect the material of the boat and, if necessary, shall be sheathed to prevent abrasion of the fabric.

5.3 The forward lifting attachments shall be securely fastened to the hull and may be bands passing under the hull to the tops of the buoyancy tubes terminating in D rings or eyes to take bridle slings.

5.4 The after lifting attachments shall be similar to the forward attachments or may be made directly to the transom.

5.5 The bridle slinging arrangements used for lowering and recovering the boat shall be such that the breaking tensile strength is at least 6 times the sum of the mass of the boat, its full equipment and a crew of 2 persons each of mass 75 kg.

5.6 The bridle sling lifting arrangements shall be proof tested to not less than 4 times their respective working loads. The proof testing can be carried out either:

.1 individually on each item associated with the lifting arrangements; or

.2 on the assembly of a structurally completed boat with its lifting arrangements and particular bridle sling. In each case fabric, webbings and cordages forming part of the lifting arrangements shall have a breaking strength of not less than six times their respective working loads.

6. *Markings*

.1 The dimensions of the boat, the number of persons which it is permitted to accommodate, the makers serial number, name or trade mark and the date of manufacture shall be marked on the boat in clear permanent characters;

.2 The name and port of registry of the ship to which the boat belongs shall be marked on each side of the boat's bow in block capitals of the Roman alphabet;

.3 Means of identifying the ship to which the boat belongs and the number of the boat shall be marked in such a way that they are visible from above;

.4 All materials used to mark an inflated boat shall be of a type which is compatible with the boat's coated fabric and approved by the boat manufacturer.

7. *Boat equipment*

7.1 All items of boat equipment with the exception of the boat hook which shall be kept available for fending off purposes shall be secured within the boat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements, or other suitable means. The equipment shall be secured in such a manner as not to interfere with any launching or recovery procedures. All items of boat equipment shall be as small and of as little mass as possible and shall be packed in suitable and compact form.

7.2 The equipment of every boat shall consist of:

.1 at least 2 buoyant oars or paddles to make headway in calm seas; crutches or equivalent arrangements shall be provided for each oar, and shall be permanently attached to the boat;

.2 a buoyant bailer;

.3 a sea-anchor complying with the requirements of Part I of Schedule 7;

.4 one buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by paragraph 2.14;

.5 a painter 20 metres in length;

.6 one waterproof electric torch suitable for Morse signalling, together with one spare set of batteries and one spare bulb in a waterproof container;

.7 one whistle or equivalent sound signal;

.8 a first aid outfit in a waterproof case capable of being closed tightly after use; and complying with the requirements of Part II of Schedule 7;

.9 two buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

.10 thermal protective aids sufficient for 10% of the number of persons the boat is permitted to accommodate or two, whichever is the greater;

.11 a buoyant safety knife;

.12 two sponges;

.13 an efficient manually operated bellows or pump;

.14 a repair kit in a suitable container for repairing punctures;

.15 a safety boat hook; and

.16 a portable fire extinguisher.

8. *Instructions and Information*

.1 Intructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instuctions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:

.1 general description of the boat and its equipment;

.2 installation arrangements;

.3 operational instructions including use of equipment;

.4 emergency repair instructions;

.5 deployment, boarding and launching instructions;

.6 release from launching appliance;

.7 on board maintenance requirements;

.8 servicing requirements

.9 use of engine;

.10 recovery of boat including stowage and securing.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 16

SCHEDULE 4

REQUIREMENTS FOR LIFERAFTS

PART I

INFLATABLE LIFERAFTS (SOLAS)

1. *General*

1.1 All inflatable liferafts prescribed in this Part shall:—

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range of −30°C to +65°C;

.3 be capable of operating throughout an air temperature range of −30°C to +65°C, and a sea water temperature range of −1°C to +30°C;

.4 be rot-proof, corrosion-resistant, and not be unduly affected by sea-water, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 have a canopy of a highly visible colour;

.7 be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 when fully inflated and floating with the canopy uppermost be stable in a seaway.

2. *Construction*

2.1 Every liferaft shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions without such deterioration as would involve any loss of seaworthiness.

2.2 The liferaft shall be so constructed that when it is dropped into the water in its container from a height of 18 metres, the liferaft and its equipment will operate satisfactorily. If the liferaft is to be stowed at a height of more than 18 metres above the waterline in the lightest seagoing condition, it shall be of a type which has been satisfactorily drop-tested from at least that height.

2.3 The floating liferaft shall be capable of withstanding repeated jumps on to it from a height of at least 4.5 metres above its floor both with and without the canopy erected.

2.4 The liferaft and its fittings shall be so constructed as to enable it to be towed at a speed of 3 knots in calm water when loaded with its full complement of persons and equipment and with one of its sea-anchors streamed.

2.5 The liferaft shall have a canopy to protect the occupants from exposure

which is automatically set in place when the liferaft is launched and waterborne. The canopy shall comply with the following:

.1 it shall provide insulation against heat and cold by means of either two layers of material separated by an air gap or other equally efficient means; means shall be provided to prevent accumulation of water in the air gap;

.2 its interior shall be of a colour that does not cause discomfort to the occupants;

.3 each entrance shall be clearly indicated and be provided with efficient adjustable closing arrangements which can be easily and quickly opened from inside and outside the liferaft so as to permit ventilation but exclude seawater, wind and cold; liferafts accommodating more than eight persons shall have at least two diametrically opposite entrances.

.4 it shall admit sufficient air for the occupants at all times, even with the entrances closed;

.5 it shall be provided with at least one viewing port in liferafts accommodating up to 25 persons and at least two diametrically opposite viewing ports in liferafts accommodating more than 25 persons;

.6 it shall be provided with means for collecting rain water;

.7 it shall have sufficient headroom for seated occupants under all parts of the canopy.

2.6 The main buoyancy chamber shall be divided into:

.1 not less than two separate compartments, each inflated through a non-return inflation valve on each compartment;

.2 the buoyancy chambers shall be so arranged that in the event of one of the compartments, being damaged or failing to inflate, the intact compartment, shall be able to support, with positive freeboard over the liferaft's entire periphery, the number of persons which the liferaft is permitted to accommodate, each having a mass of 75 kg., and seated in their normal positions.

2.7 The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold either:

.1 by means of one or more compartments that the occupants can inflate, or which inflate automatically and can be deflated and reinflated by the occupants; or

.2 by other equally efficient means not dependent on inflation.

2.8 The liferaft shall be inflated with a non-toxic gas by an inflation system complying with the requirements of Part VIII of Schedule 4. Inflation shall be completed within a period of 1 minute at an ambient temperature of between 18°C and 20°C and within a period of 3 minutes at an ambient temperature of −30°C. After inflation the liferaft shall maintain its form when loaded with its full complement of persons and equipment.

2.9 Each inflatable compartment shall be capable of withstanding a pressure equal to at least 3 times the working pressure and shall be prevented from reaching a pressure exceeding twice the working pressure either by means of relief valves or by a limited gas supply. Means shall be provided for fitting the topping-up pump or bellows required by Part IV of Schedule 4 so that the working pressure can be maintained.

2.10 The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:

.1 the greatest whole number obtained by dividing by 0.096 the volume, measured in cubic metres of the main buoyancy tubes (which for this purpose shall include neither the arches nor the thwarts if fitted) when inflated; or

.2 the greatest whole number obtained by dividing by 0.372 the inner horizontal cross-sectional area of the liferaft measured in square metres (which for this purpose may include the thwart or thwarts, if fitted) measured to the innermost edge of the buoyancy tubes; or

.3 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated with sufficient comfort and headroom without interfering with the operation of any of the liferaft's equipment.

2.11 No liferaft shall be approved which has a carrying capacity of less than six persons calculated in accordance with the requirements of paragraph 2.10, except that in ships of Classes VIII(A), VIII(A)(T), and XI, in ships of Classes VIII and VIII(T) of less than 500 tons, in ships of Class IX not being ships of 500 tons or over engaged on an international voyage and in ships of Class XII of 21.3 metres in length or over the minimum carrying capacity of liferafts may be four persons, provided that liferafts which are deemed fit to accommodate less than six persons shall only be carried on such ships in which the total number of persons on board is less than six.

2.12 Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of Part III of Schedule 6 and is not required to be portable, the total mass of the liferaft, its container and its equipment shall not be more than 185 kg.

3. *Liferaft Fittings*

3.1 Lifelines shall be securely becketed around the inside and outside of the liferaft.

3.2 The liferaft shall be provided with arrangements for adequately siting and securing in the operating position the antenna provided with the portable radio apparatus required by regulations 5(6)*(a)*, 6(8)*(a)*, 7(9)*(a)*, and 8(11)*(a)* of these Regulations.

3.3 The liferaft shall be fitted with an efficient painter of length equal to not less than twice the distance from the stowed position to the waterline in the lightest seagoing condition or 15 metres whichever is the greater.

3.4 The breaking strength of the painter system including its means of attachement to the liferaft except the weak link required by Part V of Schedule 4 shall be:

.1 7.5 kilonewtons for liferafts accommodating up to 8 persons

.2 10.0 kilonewtons for liferafts accommodating 9 to 25 persons

.3 15.0 kilonewtons for liferafts accommodating more than 25 persons or have a factor of safety of 3 in association with the requirement of paragraph 2.4 above whichever is the greater.

3.5 At least one entrance shall be fitted with a semi-rigid boarding ramp to enable persons to board the liferaft from the sea so arranged as to prevent significant deflation of the liferaft if the ramp is damaged. Liferafts accommodating more than 25 persons shall have at least two diametrically opposite entrances fitted with semi-rigid boarding ramps. In the case of davit-launched liferafts a boarding ramp shall not be fitted at the entrance where bowsing lines and embarkation facilities are fitted.

3.6 Entrances not provided with a boarding ramp shall have a boarding ladder, the lowest step of which shall be weighted and float at a level not less than 0.4 metres below the liferaft's light waterline.

3.7 There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

3.8 The stability of liferafts capable of carrying 25 persons or less when in the inverted position shall be such that they can be righted in a seaway and in calm water by one person. Liferafts in excess of 25 persons capacity shall have righting facilities acceptable to the Department of Transport. The righting position of the liferaft shall be suitably marked and have a non-skid surface.

3.9 The stability of the liferaft when loaded with its full complement of persons and equipment shall be such that it can be towed at speeds of up to 3 knots in calm water.

3.10.1 The liferaft shall be fitted with water pockets complying with the following requirements:

.1 The cross-sectional area of the pockets shall be in the shape of an isosceles triangle with the base of the triangle attached to the underside of the liferaft.

.2 The design shall be such that the pockets fill to approximately 60% of capacity within 15–25 seconds of deployment.

.3.1 The pockets shall normally have an aggregate capacity of between 225 litres and 250 litres for inflatable liferafts up to and including the 10 person size.

.3.2 The pockets to be fitted on liferafts certified to carry more than 10 persons shall have an aggregate capacity of (20×N) litres, where N=Number of persons carried but in no case should the aggregate capacity be less than (18×N) litres.

.4 The pockets shall be attached on all of their sides to the underside of the liferaft.

.5 The pockets shall be distributed symmetrically round the circumference of the liferaft either side of the CO_2 bottle with sufficient separation between each pocket to enable air to escape readily. The minimum number of pockets shall normally be in the order of:—

RAFT CAPACITY	NO OF POCKETS
6— 8 inclusive	5
9—16 inclusive	7
17—25 inclusive	11

Any arrangement less than the above must be submitted to the Department of Transport for consideration.

3.10.2 Any equivalent stability arrangement other than that detailed in 3.10.1 must be submitted to the Department of Transport for consideration.

3.11 At least one manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted to the top outside of the liferaft canopy.

3.12 A manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted inside the liferaft.

3.13 Each inflatable liferaft shall be fitted with equipment complying with the relevant requirements of Part IV of this schedule.

4. *Containers for inflatable liferafts*

4.1 The liferaft shall be packed in a container that is:

.1 so constructed as to withstand conditions encountered at sea;

.2 of sufficient inherent buoyancy, when packed with the liferaft and its equipment, to pull the painter from within and to operate the inflation mechanism should the ship sink;

.3 as far as practicable watertight, except for drain holes in the container bottom.

4.2 The liferaft shall be packed in its container in such a way as to ensure, as far as possible, that the waterborne liferaft inflates in an upright position on breaking free from its container.

4.3 The container shall be marked with:

.1 maker's name or trade mark;

.2 serial number;

.3 DOT(UK) approved, and the number of persons it is permitted to carry;

.4 SOLAS 86;

.5 type of emergency pack enclosed;

.6 date when last serviced;

.7 length of painter;

.8 maximum permitted height of stowage above waterline (depending on drop-test height and length of painter);

.9 launching instructions.

5. *Markings on inflatable liferafts*

The liferaft shall be marked with:

.1 maker's name or trade mark;

.2 serial number;

.3 date of manufacture (month and year);

.4 DOT(UK) approved;

.5 name and place of servicing station where it was last serviced;

.6 number of persons it is permitted to accommodate over each entrance in characters not less than 100mm., in height of a colour contrasting with that of the liferaft canopy.

6. *Davit-launched inflatable liferafts*

6.1 In addition to the above requirements, a liferaft for use with an approved launching appliance complying with Part III of Schedule 6 shall:

.1 when the liferaft is loaded with its full complement of persons and equipment, be capable of withstanding a lateral impact against the ship's side at an impact velocity of not less than 3.5 metres per second and also a drop into the water from a height of not less than 3 metres without damage that will affect its function;

.2 be provided with means for bringing the liferaft alongside the embarkation deck and holding it securely during embarkation. The distance between the liferaft and the bowsing line securing point shall be kept to a minimum to restrict movement of the liferaft during boarding;

.3 when suspended from its lifting hook or bridle withstand a load of:—

.3.1 4 times the mass of its full complement of persons and equipment, at an ambient temperature and a stabilised liferaft temperature of $20 \pm 3°C$ with all relief valves inoperative; and

.3.2 1.1 times the mass of its full complement of persons and equipment at an ambient temperature and a stabilised liferaft temperature of $-30°C$ with all relief valves operative.

6.2 Rigid containers for liferafts to be launched by a launching appliance shall be so secured that the container or parts of it are prevented from falling into the sea during inflation and launching of the liferaft.

6.3 Every passenger ship davit-launched liferaft shall be so arranged that it can be rapidly boarded by its full complement of persons.

6.4 Every cargo ship davit-launched inflated liferaft shall be so arranged that it can be boarded by its full complement of persons in not more than 3 minutes from the time the instruction to board is given.

7. *Instructions and Information*

.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12, and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include as appropriate the following:—

.1 general description of the liferaft and its equipment;

.2 installation arrangements;

.3 operational instructions including use of associated survival equipment;

.4 survival instructions;

.5 emergency repair instructions;

.6 deployment, boarding and launching instructions;

.7 method of launching from within the raft;

.8 release from launching appliance;

.9 on board maintenance requirements;

.10 servicing requirements.

Regulations 9, 11 and 16 PART II

INFLATABLE LIFERAFTS (NON SOLAS)

1. *General*

Liferafts carried on board ships of Classes IX(A), IX(A)(T) and in ships of Class XII of less than 21.3 metres in length shall comply with the requirements of Part 1 of this Schedule provided that paragraphs 1.1.2, 2.2, 2.5.6, 2.7.1, 2.8, 2.11, 3.3, 4.3.4 and 6.1.3.2, may be modified as follows:

.1 the drop height of 18 metres referred to in paragraph 2.2 of Part I may be 6 metres; if the liferaft is to be stowed at a height of more than 6 metres above the waterline in the lightest seagoing condition, it shall be of a type which has been satisfactorily drop-tested from at least that height;

.2 the means for collecting rain referred to in paragraph 2.5.6 of Part 1 need not be provided;

.3 the means for insulating the floor of the liferaft against cold as referred to in paragraph 2.7.1 of Part 1 need not be provided;

.4 the temperature of −30°C referred to in paragraphs 1.1.2, 2.8 and 6.1.3.2 may be −18°C;

.5 the minimum carrying capacity of liferafts required by paragraph 2.11 of Part I as six persons may be four persons provided that liferafts which are deemed fit to accommodate less than six persons shall only be carried on such ships on which the total number of persons on board is less than six;

.6 the liferaft shall be fitted with an efficient painter of length equal to not less than twice the distance from the stowed position to the waterline in the lightest seagoing condition or 10 metres whichever is the greater;

.7 the container shall be marked with 'DOT(UK) '86' in lieu of the marking required by paragraph 4.3.4 of Part I.

PART III Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 16

RIGID LIFERAFTS

1. *General*

1.1 All rigid liferafts prescribed in this Part shall:

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout the air temperature range of −30°C to +65°C;

.3 be capable of operating throughout an air temperature range of −30°C to +65°C, and a sea water temperature range of −1°C to +30°C;

.4 be rot-proof, corrosion-resistant, and not be unduly affected by sea-water, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 have a canopy of a highly visible colour;

.7 be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State;

.8 when floating with the canopy uppermost be stable in a seaway.

2. *Construction*

2.1 Every liferaft shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions without such deterioration as would involve any loss of seaworthiness.

2.2 The liferaft shall be so constructed that when it is dropped into the water from a height of at least 18 metres, the liferaft and its equipment will operate satisfactorily. If the liferaft is to be stowed at a height of more than 18 metres above the waterline in the lightest seagoing condition, it shall be of a type which has been satisfactorily drop-tested from at least that height.

2.3 The floating liferaft shall be capable of withstanding repeated jumps on to it from a height of at least 4.5 metres above its floor both with and without the canopy erected.

2.4 The liferaft and its fittings shall be so constructed as to enable it to be towed at a speed of 3 knots in calm water when loaded with its full complement of persons and equipment and with one of its sea-anchors streamed.

2.5 The liferaft shall have a canopy to protect the occupants from exposure which is automatically set in place when the liferaft is launched and waterborne. The canopy shall comply with the following:

.1 it shall provide insulation against heat and cold by means of either two layers of material separated by an air gap or other equally efficient means; means shall be provided to prevent accumulation of water in the air gap;

.2 its interior shall be of a colour that does not cause discomfort to the occupants;

.3 each entrance shall be clearly indicated and be provided with efficient adjustable closing arrangements which can be easily and quickly opened from inside and outside the liferaft so as to permit ventilation but exclude seawater, wind and cold; liferafts accommodating more than eight persons shall have at least two diametrically opposite entrances;

.4 it shall admit sufficient air for the occupants at all times, even with the entrances closed;

.5 it shall be provided with at least one viewing port;

.6 it shall be provided with means for collecting rain water;

.7 it shall have sufficient headroom for seated occupants under all parts of the canopy.

2.6 The buoyancy of the liferaft shall be provided by approved inherently buoyant material placed as near as possible to the periphery of the liferaft. The buoyant material shall be fire-retardant or be protected by a fire-retardant covering.

2.7 The floor of the liferaft shall prevent the ingress of water and shall effectively support the occupants out of the water and insulate them from cold.

2.8 The number of persons which a liferaft shall be permitted to accommodate shall be equal to to the lesser of:

.1 the greatest whole number obtained by dividing by 0.096 the volume, measured in cubic metres of the buoyancy material multiplied by a factor of 1 minus the specific gravity of that material; or

.2 the greatest whole number obtained by dividing by 0.372 the horizontal cross-sectional area of the floor of the liferaft measured in square metres; or

.3 the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated with sufficient comfort and headroom without interfering with the operation of any of the liferaft's equipment.

2.9 No liferaft shall be approved which has a carrying capacity of less than six persons calculated in accordance with the requirements of paragraph 2.8.

2.10 Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of Part III of Schedule 5 and is not required to be portable, the total mass of the liferaft, its container, and equipment shall not be more than 185 kg.

3. *Liferaft fittings*

3.1 Lifelines shall be securely becketed around the inside and outside of the liferaft.

3.2 The liferaft shall be provided with arrangements for adequately siting and securing in the operating position the antenna provided with the portable radio apparatus required by regulations 5(6)*(a)*, 6(8)*(a)*, 7(9)*(a)*, and 8(11)*(a)* of these Regulations.

3.3 The liferaft shall be fitted with an efficient painter of length equal to not

less than twice the distance from the stowed position to the waterline in the lightest seagoing condition or 15 metres whichever is the greater.

3.4 The breaking strength of the painter system including its means of attachment to the liferaft except the weak link required by Part V of Schedule 4 shall be:

.1 7.5 kilonewtons for liferafts accommodating up to 8 persons

.2 10.0 kilonewtons for liferafts accommodating 9 to 25 persons

.3 15.0 kilonewtons for liferafts accommodating more than 25 persons or have a factor of safety of 3 in association with the requirement of paragraph 2.4 above whichever is the greater.

3.5 At least one entrance shall be fitted with a rigid boarding ramp to enable persons to board the liferaft from the sea. In the case of a davit-launched liferaft having more than one entrance, the boarding ramp shall not be fitted at the entrance where bowsing lines and embarkation facilities are fitted.

3.6 Entrances not provided with a boarding ramp shall have a boarding ladder, the lowest step of which shall be weighted and float at a level not less than 0.4 metres below the liferaft's light waterline.

3.7 There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

3.8 Unless the liferaft is capable of operating safely whichever way up it is floating, its strength and stability shall be such that it is either self-righting or can be readily righted in a seaway and in calm water by one person.

3.9 The stability of a liferaft when loaded with its full complement of persons and equipment shall be such that it can be towed at speeds of up to 3 knots in calm water.

3.10 At least one manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted to the top outside of the liferaft canopy.

3.11 A manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted inside the liferaft.

3.12 Each rigid liferaft shall be fitted with equipment complying with the relevant requirements of Part IV of this Schedule.

4. *Markings on rigid liferafts*

4.1 The liferafts shall be marked with:

.1 name and port of registry of the ship to which it belongs;

.2 maker's name or trade mark;

.3 serial number;

.4 DOT(UK) approved;

.5 number of persons it is permitted to accommodate over each

entrance in characters not less than 100mm. in height of a colour contrasting with that of the liferaft;

.6 SOLAS 86;

.7 type of emergency pack enclosed;

.8 length of painter;

.9 date of manufacture (month and year);

.10 maximum permitted height of stowage above waterline (depending on drop-test height and length of painter);

.11 launching instructions.

5. *Davit-launched rigid liferafts*

5.1 In addition to the above requirements, a rigid liferaft for use with an approved launching appliance complying with Part III of Schedule 6 shall:

.1 when suspended from its lifting hook or bridle, withstand a load of 4 times the mass of its full complement of persons and equipment;

.2 when the liferaft is loaded with is full complement of persons and equipment, be capable of withstanding a lateral impact against the ship's side at an impact velocity of not less than 3.5 metres per second and also a drop into the water from a height of not less than 3 metres without damage that will affect its function;

.3 be provided with means for bringing the liferaft alongside the embarkation deck and holding it securely during embarkation; the distance between the liferaft and the bowsing line securing point shall be kept to a minimum to restrict movement of the liferaft during boarding.

5.2 Every passenger ship davit-launched liferaft shall be so arranged that it can be rapidly boarded by its full complement of persons.

5.3 Every cargo ship davit-launched liferaft shall be so arranged that it can be boarded by its full complement of persons in not more than 3 minutes from the time the instruction to board is given.

6. *Instructions and Information*

6.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12, and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the liferaft and its equipment;

.2 installation arrangements;

.3 operational instructions including use of associated survival equipment;

.4 survival instructions;

.5 emergency repair instructions;

.6 deployment, boarding and launching instructions;

.7 method of launching from within the raft;

.8 release from launching appliance;

.9 on board maintenance requirements;

.10 servicing requirements.

PART IV Schedule 4, Parts I, II and III

LIFERAFT EQUIPMENT

1.1 Subject to the provisions of paragraphs 2, 3 and 4 of this Part, the equipment of every liferaft shall consist of:

.1 one buoyant rescue quoit, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

.2 one knife of the non-folding type having a buoyant handle and stowed in a pocket on the upper buoyancy tube near that entrance of the raft which is adjacent to the painter and must be secured to the liferaft by a light line of sufficient length to enable the painter to be readily cut; in addition, a liferaft which is permitted to accommodate 13 persons or more shall be provided with a second knife which need not be of the non-folding type; the stowage position of the knives shall be highlighted;

.3 for a liferaft which is permitted to accommodate not more than 12 persons, one buoyant bailer; for a liferaft which is permitted to accommodate 13 persons or more, two buoyant bailers;

.4 two sponges;

.5 two sea-anchors each complying with the requirements of Part I of Schedule 7, one being spare, and the other permanently attached to the liferaft in such a way as to be readily deployable when the liferaft inflates to enable the liferaft to lie oriented to the wind in the most stable manner;

.6 two buoyant paddles;

.7 three tin openers; safety knives containing special tin-opener blades are satisfactory for this requirement;

.8 one first-aid outfit complying with the requirements of Part II of Schedule 7, in a waterproof case capable of being closed tightly after use;

.9 one whistle or equivalent sound signal;

.10 four rocket parachute flares;

.11 six hand flares;

.12 two buoyant smoke signals;

.13 one waterproof electric torch suitable for Morse signalling together with one spare set of batteries and one spare bulb in a waterproof container;

.14 an efficient radar reflector;

.15 one daylight signalling mirror with instructions on its use for signalling to ships and aircraft;

.16 one copy of the Department of Transport Rescue Signal Table published by Her Majesty's Stationery Office;

.17 one set of fishing tackle;

.18 a food ration complying with the requirements of Part III of Schedule 7, totalling not less than 10,000 kilojoules for each person the liferaft is permitted to accommodate; these rations shall be supplied in airtight packaging and be stowed in a watertight container;

.19 watertight receptacles containing a total of 1.5 litres of fresh water complying with the requirements of Part IV of Schedule 7 for each person the liferaft is permitted to accommodate, of which 0.5 litres per person may be replaced by a de-salting apparatus capable of producing an equal amount of fresh water in 2 days;

.20 one rustproof drinking vessel graduated in millilitres;

.21 six doses of anti-seasickness medicine and one seasickness bag for each person the liferaft is permitted to accommodate;

.22 instructions printed in English on how to survive;

.23 instructions for immediate action;

.24 thermal protective aids sufficient for 10% of the number of persons the liferaft is permitted to accommodate or two, whichever is the greater.

1.2 Liferafts equipped in accordance with paragraph 1.1 shall be marked in block capitals of the Roman alphabet, "SOLAS A PACK".

2.1 Liferafts carried on passenger ships engaged on short international voyages shall be provided with the equipment specified in paragraphs 1.1.1 to 1.1.6 inclusive, 1.1.8, 1.1.9, 1.1.13 to 1.1.16 inclusive and 1.1.21 to 1.1.24 inclusive and one half of the equipment specified in paragraphs 1.1.10 to 1.1.12 inclusive.

2.2 Liferafts equipped in accordance with paragraph 2.1 shall be marked in block capitals of the Roman alphabet, "SOLAS B PACK".

3.1 Liferafts carried on board ships of Classes IX(A) and IX(A)(T) shall be provided with the equipment specified in paragraphs 1.1.1 to 1.1.4 inclusive, 1.1.9, 1.1.13, 1.1.16, 1.1.22 and 1.1.23 and one half of the equipment specified in paragraph 1.5.

3.2 Liferafts equipped in accordance with paragraph 3.1 shall be marked in block capitals of the Roman alphabet, "DOT (UK) C PACK".

4.1 Liferafts carried on board ships of Class XII of less than 21.3 metres in length shall be provided with the equipment specified in paragraphs 1.1.1 to 1.1.6 inclusive, 1.1.8, 1.1.9, 1.1.13, 1.1.15, 1.1.16, 1.1.17, 1.1.20 to 1.1.24 inclusive and one half of the equipment specified in paragraphs 1.1.10, 1.1.11, 1.1.12 together with the following equipment:—

.1 one safety tin opener;

.2 one third of the food ration required by paragraph 1.1.18; and

.3 watertight receptacles containing a total of 0.5 litres of fresh water

complying with the requirements of paragraphs 1 and 2 of Part IV of Schedule 7 for each person the liferaft is permitted to accommodate.

4.2 Liferafts equipped in accordance with paragraph 4.1 shall be marked in block capitals of the Roman alphabet "DOT (UK) D PACK".

5. Where appropriate the equipment shall be stowed in a container which, if it is not an integral part of, or permanently attached to, the liferaft, shall be stowed and secured inside the liferaft and be capable of floating in water for at least 30 minutes without damage to its contents. The line which secures the equipment container to the liferaft shall have a breaking strain of 2 kN or a breaking strain of 3:1 based on the mass of the complete equipment pack, whichever is the greater.

6. *Additional equipment for inflatable liferafts*

6.1 In addition to the above requirements every inflatable liferaft shall be provided with:

.1 one repair outfit for repairing punctures in buoyancy compartments;

.2 one topping-up pump or bellows.

6.2 The knives required by paragraph 1.1.2 shall be safety knives.

PART V Schedule 6, Part III

AUTOMATIC RELEASE HOOKS

1. *Definitions*

1.1 In this Part the following definitions apply:—

.1 "actuating force" means the force required to set the actuating mechanism;

.2 "actuating mechanism" means the mechanism which, when operated, allows the liferaft to be released automatically;

.3 "automatic release mechanism" means the mechanism which opens the hook automatically to release the liferaft;

.4 "hook" means a hook to be used for the launching of liferafts which can be activated to automatically release the liferaft when it is waterborne.

2. *Functional criteria*

2.1 The hook shall be reliable and easily handled by one person during the preparation, embarkation, launching and release of the liferaft.

2.2 The hook and its accessories shall be made of materials suitable for use in the marine environment.

2.3 A minimum factor of safety of six based on the ultimate strength of the materials used shall be applied to the design of all parts of the hook.

2.4 The lever for manual release and the actuating mechanism may be separate.

2.5 There shall be a clear and durable indicator to show if the actuating mechanism has been operated. The automatic release mechanism shall be such that positions between "safe" and "cocked" are not possible.

2.6 With the hook in the automatic release position the liferaft shall be released as soon as it is waterborne. The release of the liferaft shall be immediate and complete. Means shall be provided to ensure that the hook does not open when the liferaft swings, bumps into the ship's side or is otherwise influenced by the wind during the lowering operation.

2.7 It shall be possible to release the hook manually after launching. The manual release mechanism shall be designed having regard to the risk of unintentional release during the preparation, embarkation and lowering of the liferaft.

3. *Compatability*

3.1 The compatability of automatic release hooks and inflatable liferafts shall be established by operational tests with each type, size and manufacture of liferaft to be carried, before a particular combination of release hook and liferaft is accepted by the Secretary of State.

4. *Instructions and information*

Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance.

Instructions and information shall be in English in a clear and concise form and shall include the operation and maintenance of the automatic release hook.

Regulation 16

PART VI

FLOAT FREE ARRANGEMENTS

1. *General*

Float free arrangements shall provide for a liferaft to be released automatically in the event of a ship sinking.

2. *Painter System*

The liferaft painter system shall provide a connection between the ship and the liferaft and shall be so arranged as to ensure that the liferaft when released and in the case of an inflatable liferaft when inflated, is not dragged under by the sinking ship.

3. *Hydrostatic Release Unit*

3.1 Construction

A hydrostatic release unit used in the float-free arrangements shall be so constructed that:—

.1 the materials used are compatible so as to prevent malfunction of the unit; galvanising or other forms of metallic coating on parts of the release unit will not be accepted;

.2 it has drains to prevent the accumulation of water in the hydrostatic chamber when the unit is in its normal position;

.3 each part connected to the painter system has a strength not less than that required by the painter;

.4 it can readily be removed for replacement or annual servicing.

3.2 Materials and Components

Materials and components shall be corrosion-resistant and not affected by seawater, oil or detergents.

3.3 Performance

A hydrostatic release unit shall:

.1 function properly throughout an air temperature range of −30°C to +65°C;

.2 function properly throughout a seawater temperature range of −1°C to +30°C;

.3 automatically release the liferaft at a depth of not more than 4 metres;

.4 not release prematurely when seas wash over the unit;

.5 be capable of releasing a liferaft when the stowage is:

.1 horizontal;

.2 tilted 45° and 100° with the hydrostatic release unit at the upper side;

.3 tilted 45° and 100° with the hydrostatic release unit at the lower side;

.4 vertical.

3.4 Marking

A hydrostatic release unit shall be marked permanently on its exterior with a means of identifying its type, serial number, depth at which it will release, and in addition if of a type which;

.1 requires annual servicing with its date of manufacture and a small plate permanently attached to the unit for recording the date of servicing.

.2 is disposable, with the date at which it must be replaced.

3.5 Instructions and Information

Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance.

Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the unit;

.2 installation instructions;

.3 any on board maintenance requirements;

.4 servicing requirements.

4. *Weak Link*

4.1 Construction and Materials

A weak link used in the float-free arrangements shall:

.1 be made from a material which is corrosion resistant and not affected by seawater, oil or detergent;

.2 when made of cordage have the ends either whipped or heat treated;

.3 when made from a flexible wire have each end looped around a thimble and secured with a locking ferrule.

4.2 Performance

A weak link shall be of sufficient strength to:

.1 pull the painter out of the liferaft container;

.2 operate the liferaft inflation system;

.3 break under a tensile force of between 1.8 and 2.6 kNs.

Schedule 4, Parts I, II and III PART VII

LIFERAFT LIGHTS

1. *General*

1.1 Internal and External Lights

.1 The lights shall be arranged with manual control and shall operate automatically when the liferaft inflates in the case of an inflatable liferaft and when the canopy is set in place in the case of a rigid liferaft.

.2 Each light shall be connected independently to its own power source.

.3 The external light may be of a flashing type.

2. *Construction*

Internal and External Lights

.1 The complete light unit shall be constructed with proper workmanship and materials.

.2 It shall be capable of withstanding the drop-test on a liferaft without damage to the light or the liferaft.

.3 It shall be capable of withstanding a drop of 2 metres on to a rigidly mounted steel plate or concrete surface.

.4 It shall be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal growth.

.5 It shall not deteriorate due to damp or humidity when stowed with a liferaft in its container.

.6 The power source shall be a sea activated or dry chemical cell battery.

.7 The power source shall be proofed against leakage of any chemicals which could damage or cause deterioration of any fabrics used in the construction of the liferaft.

.8 The connection between light and power source shall be suitably protected.

.9 The power source in the inactive condition with the terminals covered shall be capable of being immersed for 30 days in salt water without deterioration or loss of power.

.10 The lamp holder, and lens shall be so constructed to prevent the ingress of water.

.11 A flashing light shall not be fitted with a lens or curved reflector to concentrate the beam.

3. *Performance*

3.1 Internal and External Lights

.1 The lights shall have an operational endurance of not less than 12 hours.

.2 They shall not be damaged in storage and shall operate in a satisfactory manner throughout the air temperature range −30°C to +65°C.

.3 They shall operate in a satisfactory manner throughout a seawater temperature of −1°C to +30°C.

.4 They shall have a shelf life of not less than 3 years.

3.2 Internal light

.1 The light shall be of sufficient luminous intensity to enable survival and equipment instructions to be read.

3.3 External Light

.1 The light shall be visible on a dark night with a clear atmosphere at a distance of at least 2 miles.

.2 It shall be visible through 360 degrees in a horizontal direction and over as great a segment of the upper hemisphere as is practical, when attached to a liferaft.

.3 In the case of a flashing light it shall flash at a rate of not less than 50 flashes per minute for the first 2 hours of operation.

4. *Markings*

Internal and External Lights

4.1 The power source shall be marked externally with:—

.1 the manufacturer's name or trade mark;

.2 the type and batch number;

.3 date of manufacture and expiry;

.4 the words "DOT (UK) APPROVED".

4.2 If the power source is a chemical pressurised cell it shall be clearly marked with a suitable warning notice.

Schedule 4, Part I

PART VIII

GAS INFLATION SYSTEM

1. *General*

.1 The component parts of the gas inflation system shall be constructed with proper workmanship and materials.

.2 The capacity of the gas charge shall be sufficient to achieve full working pressure in a liferaft within 1 minute at an ambient temperature of 18–20°C, and within 3 minutes at a temperature of −30°C.

.3 The inflation system shall be fitted with a pressure relief arrangement capable at a temperature of +65°C of exhausting sufficient capacity of gas to prevent damage to a liferaft through overpressure.

.4 The inflation system shall provide sufficient pressure to enable a liferaft to maintain its form when loaded with a full complement of persons and equipment.

.5 Activation of the inflation system shall be capable of being carried out by one person with a single action.

.6 The gas cylinder, valve, and operating head shall be fitted on the outside of a liferaft.

.7 The inflation system shall not be damaged in stowage and shall operate in a satisfactory manner throughout the air temperature range −30°C to +65°C.

.8 The inflation system shall operate in a satisfactory manner throughout a seawater temperature of −1°C to +30°C.

.9 The gas cylinder, cylinder valve, and operating head shall be constructed with compatible materials, which are suitable for use in a marine environment.

.10 Gas cylinders, cylinder valves, and operating heads of aluminium alloy shall not be accepted unless they have been tested in salt water to the satisfaction of the Department of Transport.

2. *Gas*

.1 The gas used in the inflation system shall be non-toxic.

.2 It shall provide a high rate of inflation, and shall be sufficiently free from icing at the outlet during expansion to prevent damage or malfunction of the inflation equipment.

.3 If the gas used is carbon dioxide its dryness shall comply with TYPE 1, SECTION ONE of British Standard 4105.

.4 The filling ratio (weight of gas to the weight of water required to fill a cylinder at 15°C) shall comply with the requirements of British Standard BS 5355.

.5 The excess gas from the relief valves must not be discharged into the liferaft.

3. *Gas Cylinders*

.1 The gas cylinder shall be acceptable to the Department of Transport and must be constructed to the standard laid down in the relevant part of British Standard 5045: Specification for Transportable Gas Containers.

.2 The gas cylinder shall be periodically inspected, tested, and maintained in accordance with the relevant part of British Standard 5430.

.3 Recharging of the gas cylinder shall be carried out at a filling station acceptable to the Department of Transport.

.4 The neck of the gas cylinder shall be suitably threaded to take an approved type of cylinder valve.

.5 If the gas used is carbon dioxide the gas passages to give maximum rate of flow must not permit expansion, and a siphoning tube shall be led from the cylinder valve into the cylinder so that the open end is immersed in liquid when the cylinder is in its operational position.

.6 To allow for variation in the accuracy of scales a tolerance in the gross mass of ± 14 grams is permissible when a gas cylinder is check weighed.

.7 Charged gas cylinders with a gas capacity of 1.1 kg or greater when check weighed shall not be deficient in gas by more than 56 grams. Charged cylinders with a gas content of less than 1.1 kg shall not be deficient in gas by more than 28 grams.

.8 The gas cylinder shall be permanently marked with:—

.1 date of manufacture, serial number, and name or mark of the manufacturer;

.2 standard or specification to which it is manufactured;

.3 date of testing and test pressure;

.4 tare mass of cylinder, and valve;

.5 minimum designed water capacity in litres.

.9 The gas cylinder after charging shall be clearly stencilled with:—

.1 tare mass;

.2 details of gas charge;

.3 total mass of cylinder, valve and contents.

4. *Gas Cylinder Valve*

.1 The cylinder valve shall be fitted with a safety relief device which will operate between 18 MPa and the test pressure of the cylinder.

.2 Threads on the cylinder valve for attachment of the high pressure hoses and operating head shall be fitted with protective caps to provide protection during storage and transit.

.3 A cylinder valve constructed from aluminium alloy shall be anodised.

.4 The cylinder valve when attached to an approved gas cylinder and operationally charged shall be capable of being stowed for a period of 17 months without damage, metal fatigue, or leakage making due allowance for changes in temperature.

.5 The cylinder valve shall be constructed of materials which will not be damaged by inflation of the liferaft, transit in a liferaft container, or routine servicing in a service station.

5. *Gas Cylinder Operating Head*

.1 The connection between the operating head and the liferaft painter shall be so arranged that the load is wholly taken by the operating mechanism until the valve has operated. When the valve has fully opened the load on the painter shall be transferred to the liferaft towing patch or bridle.

.2 The operating head at a cylinder pressure of 8.6 MPa shall fully open with a force not exceeding 150 newtons and a travel of not more than 200mm at an ambient temperature of 18–20°C.

.3 The operating head shall be fitted with a positive means of retaining the valve in the open position and include an indicator which will clearly show whether or not the valve has been operated.

.4 Attachment of the operating head to the gas cylinder shall be arranged so that there will be no tendency during fitting to slacken the cylinder valve.

.5 The operating head shall be made from non-corrodible materials.

.6 An operating head constructed from aluminium alloy shall be anodised.

.7 If a pulley arrangement is used in the operating mechanism the cable shall be protected with a flexible conduit to prevent kinking of the cable, and abrasive damage to the liferaft fabric.

.8 The operating head shall be sealed against the ingress of water.

6. *High Pressure Hose Assembly*

.1 A high pressure hose shall be used to connect the gas bottle to the liferaft inlet manifold on the buoyancy chambers.

.2 It shall be constructed of natural or synthetic rubber or other suitable material having a smooth bore and some form of reinforcement.

.3 It shall be fitted with end connectors of sufficient strength to withstand a degree of over tightening acceptable to the Department of Transport.

.4 Where nipples are inserted into the ends of the hose they shall be suitably shaped to prevent damage or abrasion to the inner lining, and provide a smooth gas flow.

.5 The outer casing of the hose shall be suitably protected against damage or abrasion.

.6 The hose shall have a minimum bursting pressure of 21 MPa at an ambient temperature 18–20°C and 4.2 MPa at a temperature of −45°C.

.7 The hose shall operate in a satisfactory manner throughout an air temperature range of −45°C to +65°C.

.8 The hose shall be capable of being bent through 180 degrees over a former of 50mm radius at a temperature of −45°C without cracking or damage.

.9 The hose shall not distort or be damaged when subjected to a hydraulic pressure of 12.5 MPa.

.10 Every hose shall be carefully inspected and marked by the manufacturer's quality inspector.

.11 The hose shall be marked externally with:—

.1 name of manufacturer;

.2 part or serial number;

.3 test date;

.4 mark of inspector.

7. *Valves*

.1 Non-return valves shall be provided at each position where gas from the inflation system enters an inflatable chamber either from the cylinder or another chamber.

.2 A safety relief valve of sufficient flow capacity that it will not be possible to achieve twice the working pressure in the chamber shall be fitted to each chamber inflated directly from the gas cylinder.

.3 A relief valve shall re-seat at a pressure sufficient to maintain rigidity in the buoyancy tubes.

.4 An inlet valve shall be fitted to each chamber inflated directly from the gas cylinder to provide a means of topping up the pressure when necessary using the bellows provided in the equipment pack.

.5 Deflation valves or plugs shall be fitted of sufficient number to enable the inflated chambers of the liferaft to be deflated for re-packing.

.6 Non-return valves or other equivalent arrangements shall be fitted to prevent loss of pressure in the canopy support if either of the buoyancy tubes become damaged.

.7 An inlet valve for topping up the pressure when necessary using the bellows provided in the liferaft equipment pack shall be fitted in the inflated arch support for the canopy.

.8 An inlet valve shall be fitted to the floor so that it can be inflated using the bellows provided in the equipment pack.

.9 A deflation valve or plug shall be fitted to the floor so that it can be deflated for re-packing.

.10 A non return valve or other equivalent arrangement shall be fitted to maintain pressure in the buoyancy tube in the event of damage to the boarding ramp.

.11 Air aspirators if fitted in the inflation system shall be of a type acceptable to the Department of Transport. They shall be suitably protected against damage and the ingress of water.

Regulation 19

SCHEDULE 5

REQUIREMENTS FOR MARINE ESCAPE SYSTEMS

PART I

CONSTRUCTION AND PERFORMANCE

1. *General*

1.1 A marine escape system shall provide a complete evacuation system for survivors, and shall consist of an inflatable escape chute, an inflatable floating boarding platform and an agreed number of inflatable liferafts.

1.2 The system shall:—

.1 be constructed with proper workmanship and materials;

.2 not be damaged in stowage throughout a temperature range of −30°C to +65°C;

.3 be capable of operating throughout an air temperature range of −30°C to +65°C, and a seawater temperature range of −2°C to +30°C;

.4 where applicable be rot-proof, corrosion-resistant and not be unduly affected by seawater, oil or fungal attack;

.5 be resistant to deterioration from exposure to sunlight;

.6 be of highly visible colour on all parts that will assist detection;

.7 be fitted with retro-reflective material where it will assist detection;

.8 be sited clear of propellers and stabilisers;

.9 be capable of removal for annual servicing;

.10 be fitted with float free facilities complying with the requirements of Part VI of Schedule 4 on those parts of the system intended for use as inflatable survival equipment;

.11 be provided with a gas inflation arrangement complying with the requirements of Part VIII of Schedule 4 which will by a single action rapidly deploy and inflate the system;

.12 be provided with an additional gas supply of capacity at least 50% of that required to inflate the system so that any loss of pressure sustained during a deployment can rapidly be replenished;

.13 if the inflation system includes air aspiration be provided with a means of protecting the aspirator from the danger of damage and the ingress of water;

.14 be capable of satisfactory operation in a seaway.

2. *Construction*

2.1 The container housing the escape chute and boarding platform.

The container shall:—

.1 be strong enough to withstand the forces which would be imposed upon it in severe weather conditions when the chute and platform is fully deployed and the maximum agreed number of fully loaded inflatable liferafts are attached to the platform; if the system is deployed using a support boom, then both the boom and container shall be strong enough to safely withstand a load which is 200% in excess of that imposed upon it in the above condition without causing damage or distortion to either the boom or the container;

.2 be suitably constructed on the outboard side to resist damage and to prevent the ingress of water;

.3 be suitably protected on the inboard side to prevent damage or accidental deployment by unauthorised personnel;

.4 be prominently labelled on the inboard side with clear deployment instructions;

.5 be large enough to house the gas inflation system;

.6 be provided with a secure, but single action quick release of the outer door;

.7 be constructed so that deployment of the system over the side will also activate the inflation arrangements;

.8 be provided with a safe access to the top of the chute for evacuees;

.9 be provided with a secure, manual release arrangement for the chute so that it can be jettisoned for use if required as additional buoyant support;

.10 be fitted on board with portable securing arrangements so that it can be removed for annual servicing;

.11 be provided with adequate drainage arrangements.

2.2 The Escape Chute

The chute shall:—

.1 consist of a single or double track slide with each track of sufficient width to prevent unrestricted evacuation by persons wearing an approved type of lifejacket;

.2 be of sufficient strength in its fully inflated condition to safely support a load of 300 kg (150 kg for a single track slide) at mid length without bending or distorting;

.3 be sub-divided such that the loss of gas in any one compartment will not restrict its operational use as a means of evacuation;

.4 be provided with a slide path which will drain quickly and be safe to operate in wet conditions;

.5 be provided with vertically inflated panels on each side of the slide path of sufficient depth to permit safe evacuation in severe weather conditions;

.6 be effectively connected to the chute container by arrangements which are capable of withstanding a load which is at least 200% greater than the load imposed in the maximum loaded condition.

2.3 The Boarding Platform

The platform shall:—

.1 be stable in a seaway and provide a safe working area for the system operators;

.2 be self draining;

.3 be sub-divided in such a way that the loss of gas from any one compartment will not restrict its operational use as a means of evacuation;

.4 be capable of supporting twice the number of persons carried in the largest inflatable liferaft associated with the system;

.5 be constructed in accordance with the buoyancy and floor area parameters stated in Part I of Schedule 4;

.6 be fitted with stabilising waterpockets designed in accordance with the standards stated in Part I of Schedule 4;

.7 be restrained by a bowsing line which is designed to deploy automatically as the system inflates, to prevent it drifting to a position where it would be deployed at an angle of more than 45° to the ship's side;

.8 be provided with mooring and bowsing line patches of sufficient strength to tie off the largest inflatable liferaft associated with the system;

.9 be provided with a means of quick release from the chute, and if intended for use as an inflatable liferaft, comply with the appropriate requirements of Part I of Schedule 4.

3. *Performance of the System*

A marine escape system shall:—

.1 be capable of deployment by one person at the embarkation position;

.2 not interfere with the deployment of any other life-saving equipment fitted in the ship;

.3 be capable of evacuating 200% of its designed capacity without significant deterioration of the slide paths;

.4 be capable of satisfactory operation in a seaway;

.5 enable the total number of persons for which it is designed to be transferred from the ship into the inflated liferafts within a period of 30 minutes in the case of a passenger ship;

.6 be capable of being deployed from a passenger ship with a trim and list 50% in excess of the limits in the final stage of flooding set by the requirements in paragraph 2 of Schedule 3 to the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984;

.7 be evaluated by means of timed evacuation deployments conducted both in harbour and at sea.

4. *Associated Inflatable Liferafts*

An inflatable liferaft used in conjunction with the marine escape system shall:—

.1 conform with the requirements of Part 1 of Schedule 4;

.2 be sited close to the system container but be capable of dropping clear of the deployed chute and boarding platform;

.3 be capable of release from its stowage rack with arrangements which will enable it to be moored and inflated alongside the boarding platform;

.4 be capable of release from its stowage rack as an independent item of life-saving equipment;

.5 be provided with float free arrangements complying with the requirements of Part VI of Schedule 4.

5. *Instructions and Information*

Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 general description of the system;

.2 installation arrangements;

.3 operational instructions for the system, and associated survival craft;

.4 on-board maintenance requirements;

.5 servicing requirements.

PART II Regulation 19

TRAINING

1. Facilities for crew training in the use of marine escape systems shall include:—

1.1 the provision on board of an operational manual for the system and its associated inflatable liferafts;

1.2 the provision of on-board training aids;

1.3 the provision ashore of a training course including as far as is possible practical exercises with full size equipment.

Regulations 2, 5, 6, 7, 8, 10, 11, 18 and 20

SCHEDULE 6

REQUIREMENTS FOR LAUNCHING APPLIANCES AND EMBARKATION LADDERS

PART I

GENERAL

1. *Launching Appliances—General requirements*

1.1 Each survival craft and rescue boat launching appliance, together with all its launching and recovery gear, shall be so arranged that the fully equipped survival craft or rescue boat it serves can be safely lowered at a list of up to 20° either way and against a trim of up to 10°:

.1 after being boarded by its full complement of persons at the stowed position or from an embarkation deck, as appropriate;

.2 without persons in the survival craft or rescue boat.

1.2 Notwithstanding the requirements of paragraph 1.1 lifeboat launching appliances for oil tankers, chemical tankers and gas carriers with a final angle of heel greater than 20°, but not greater than 30°, calculated in accordance with:

.1 Regulation 29(3)*(c)* of the Merchant Shipping (Prevention of Oil Pollution) Regulations 1983(**a**);

.2 Paragraph 2.9.2.2 of the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk(**b**);

.3 Paragraph 2.9.1.2 of the International Code for the Construction and Equipment of Ships carrying Liquefied Gases in Bulk(**c**)

as applicable, shall be capable of operating at the final angle of heel on the lower side of the ship.

1.3 Davits, winches, falls, blocks and all other launching gear provided in accordance with these Regulations shall comply with the requirements of Parts II, III or IV of this Schedule.

1.4 On ships which regularly trade to Antarctica or North of the Arctic Circle or to sea areas where ice or icing-up conditions can be expected, each launching appliance shall, as far as practicable, remain effective under conditions of icing.

2. *Launching appliances using falls and a winch*

2.1 An efficient hand gear shall be provided for recovery of each survival craft and rescue boat.

2.2 Where davit arms are recovered by power, safety devices shall be fitted which will automatically cut off the power before the davit arms reach the stops in order to avoid overstressing the falls or davits, unless the motor is designed to prevent such overstressing.

(**a**) S.I. 1983/1398.
(**b**) IMO Resolution MSC 4(48).
(**c**) IMO Resolution MSC 5(48).

2.3 A lifeboat launching appliance shall be capable of recovering and stowing the lifeboat with its launching crew.

2.4 Every rescue boat launching appliance shall be fitted with a powered winch motor of such capacity that the rescue boat, or lifeboat if it has been accepted as a rescue boat, can be raised from the water with its full rescue boat complement of persons and equipment to a position where the persons can be safely disembarked.

2.5 Every rescue boat launching appliance shall be capable of hoisting the rescue boat, or lifeboat in rescue boat mode, when loaded with its full rescue boat complement of persons and equipment at a rate of not less than 0.3 metre per second.

2.6 Except in the case where a rescue boat is fitted with single point suspension, every rescue boat carried in compliance with these Regulations shall be provided with means for facilitating the attachment of the lower fall blocks to the lifting arrangements of the boat when the boat is recovered from the sea in adverse weather conditions. For this purpose a recovery strop of adequate strength and suitable length shall be provided for each davit, and one end of the strop shall be attached to the lower fall block and the other end to the lifting arrangement on the boat. In addition means shall be provided for hanging off the boat after hoisting to enable the lower fall block to be attached directly to the lifting hook.

2.7 Every survival craft and rescue boat launching appliance shall be fitted with brakes, or equivalent devices, capable of stopping the descent of the survival craft or rescue boat and holding it securely when loaded with its full complement of persons and equipment; brake pads shall, where necessary, be protected from water and oil.

2.8 Manual brakes shall be so arranged that the brake is always applied unless the operator, or a mechanism actuated by the operator, holds the brake control in the "OFF" position.

3. *Float-free launching*

3.1 Where a survival craft requires a launching appliance and is also designed to float free, the float-free release of the survival craft from its stowed position shall be automatic.

4. *Free-fall launching*

4.1 Every free-fall launching appliance using an inclined plane shall, in addition to complying with the applicable requirements of paragraph 1 also comply with the following requirements:

.1 The launching appliance shall be so arranged that excessive forces are not experienced by the occupants of the survival craft during launching.

.2 The launching appliance shall be a rigid structure with a ramp angle and length sufficient to ensure that the survival craft effectively clears the ship.

.3 The launching appliance shall be efficiently protected against

corrosion and be so constructed as to prevent incendive friction or impact sparking during the launching of the survival craft.

5. *Evacuation-slide launching and embarkation*

5.1 Every evacuation-slide launching appliance shall, in addition to complying with the applicable requirements of paragraph 1 also comply with the requirements of Schedule 5.

6. *Instructions and Information*

6.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance.

Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 description of launching appliance and winch, where provided;

.2 operation for launching and recovery; and

.3 maintenance.

Regulations 2, 5, 6, 7, 8, 10, 11, 18 and 20

PART II

LIFEBOAT AND RESCUE BOAT LAUNCHING APPLIANCES

General

1. Definition of "Working Load"

1.1 In this Part the expression "Working Load" means:

.1 in relation to davits to which paragraphs 2.1 and 2.2 apply, the sum of the weight of the lifeboat, its full equipment the blocks and falls, and the maximum number of persons which the lifeboat is deemed fit to carry, the weight of each person being taken to be 75 kg.;

.2 in relation to winches the maximum pull exerted by the fall or falls at the winch drum during lowering, hoisting or stowing which in any case is to be taken as not less than the working load on the davit or davits divided by the velocity ratio of the lowering tackle.

Construction

2. General

2.1 Every set of davits for a lifeboat or rescue boat shall be so constructed that a minimum amount of routine maintenance is necessary. All parts requiring regular maintenance by the ship's crew shall be readily accessible and easily maintained.

2.2 A set of davits for a lifeboat and rescue boat shall not depend on any means other than gravity or stored mechanical power which is independent of

the ship's power supplies to launch the lifeboat or rescue boat it serves in the fully loaded and equipped condition and also in the light condition. If the rescue boat is a dedicated rescue boat the mechanical power need not be independent of the ship's power supplies.

2.3 The arrangements of the davits shall be such as to enable safe boarding of the lifeboat in accordance with the requirements of paragraph 3.11 or 3.12 of Part I of Schedule 1.

2.4 If partially enclosed lifeboats are carried, a davit span shall be provided, fitted with not less than two lifelines of sufficient length to reach the water with the ship in its lightest seagoing condition, under unfavourable conditions of trim and with the ship listed not less than 20° either way.

3. *Strength*

3.1 Every davit serving a lifeboat which is required by regulation 15(9)*(a)* and 15(11) to be boarded and launched from the stowed position and put into the water when loaded with its full complement of persons shall, together with its winch, falls, blocks and all other associated launching equipment, be of such strength that the lifeboat with its full equipment can be turned out and then safely lowered into the water from the stowed position with its full complement of persons, when the ship has a list of up to 20° either way and a trim up to 10°, or such greater angles as may be required under paragraph 1.2 of Part I of this Schedule.

3.2 Every davit serving a lifeboat which is required by regulation 15(9)*(a)* to be boarded and launched from an embarkation position and put into the water when loaded with its full complement of persons shall, together with its winch, falls, blocks and all other associated lowering gear, be of such strength that the lifeboat with its full equipment and manned by a launching crew of not less than two persons can be turned out and then safely lowered into the water from the embarkation position with its full complement of persons, when the ship has a list of up to 20° either way and a trim of up to 10°.

3.3 Every set of davits, davit or other means of launching to which a lifeboat is attached, together with its winch and associated gear shall be of such strength that the lifeboat can be hoisted with launching crew of at least two persons and its full equipment at a rate of not less than 0.05 metre per second when a powered winch is fitted. When an unpowered winch is fitted the hoisting rate shall be not less than 0.01 metre per second.

3.4 Every set of davits, davit or other means of launching to which a rescue boat is attached shall be fitted with a powered winch and shall, together with its associated gear, be of such strength that the boat to which it is attached can be hoisted when loaded with its full rescue boat complement of persons and equipment at a rate of not less than 0.3 metre per second: When a lifeboat is designated as a rescue boat, in accordance with regulation 20(4) the davits, davit or other means of launching shall be capable of hoisting the boat to a disembarkation position at a rate of not less than 0.3 metre per second when loaded with its full rescue boat complement, or 6 persons whichever is the greater, and its full lifeboat equipment.

4. *Gravity davits*

4.1 All gravity davits shall be so designed that there is a positive turning out moment during the whole of the davit travel from the inboard to the outboard position when the vessel is upright and also when the vessel is listed at any angle up to and including 30° either way from upright, or 10° more than the angle required by paragraph 1.2 of Part I of this Schedule. In the case of gravity type davits comprising arms mounted on rollers which engage with and travel down fixed inclined trackways, the trackways shall be inclined at an angle of not less than 35° to the horizontal when the vessel is upright.

5. *Luffing davits*

5.1 The operating gear of all luffing type davits shall be of sufficient power to ensure that the lifeboats or rescue boats fully equipped and carrying:—

.1 the total number of persons they are certified to carry when installed in accordance with regulation 15(11); or

.2 a launching crew of not less than two persons when installed in accordance with regulation 15(9)*(a)* when boarded at an embarkation deck

can be turned out against a list of at least 20°.

6. *Stresses*

6.1 Structural members and all blocks, falls, padeyes, links, fastenings and all other fittings used in connection with launching equipment shall be designed with not less than a minimum factor of safety on the basis of the maximum working load assigned and the ultimate strength of the material used for construction. A minimum factor of safety of 4.5 shall be applied to all davit and winch structural members, and bowsing tackle and tricing pendants where required and a minimum factor of safety of 6 shall be applied to falls, suspension chains, links and blocks.

7. *Static load test*

7.1 Each davit, and its attachments, shall, with its arm in any position which gives a maximum stress concentration be capable of withstanding a static test load, in a direction simulating a 20° list or such greater angle as required by paragraph 2.1 of Part I of this Schedule and 10° trim, of not less than 2.2 times that part of the working load supported by the arm, or attachment.

8. *Attachments at the davit head*

8.1 The attachments at the davit head from which the blocks are suspended shall be capable of withstanding a proof load test of not less than 2.2 times the maximum load on them.

9. *Blocks*

9.1 Lower blocks, when fitted, shall be non-toppling and in the case of rescue boats provision shall be made to prevent the falls from cabling. The size of blocks shall be commensurate with the size of the falls.

9.2 The blocks shall be capable of withstanding a proof load test of not less than 2.2 times the maximum load it is intended to carry in service. The clearance between the sheaves and the cheeks of the blocks in which wire rope is used shall be kept to a practical minimum to prevent the rope from overriding the rim of the sheave of any block or lead sheave. Component parts of blocks other than their sheaves shall be of ductile material.

10. *Wire ropes*

10.1 Falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

10.2 The breaking tensile load of each wire rope used for lowering lifeboats or rescue boats shall be not less than six times the maximum load on the wire rope when lowering, hoisting or stowing.

10.3 Wire ropes shall be securely attached to the drum of the winch, and the end attachments of the wires and other parts from which the lifeboat or rescue boat is to be suspended shall be capable of withstanding a proof load of not less than 2.2 times the load on such attachments and other parts.

10.4 Where wire rope splices or ferrule-secured eye terminals are used they shall be capable of withstanding a proof test of not less than 2.2 times the load imposed on them in service.

10.5 Lifeboats and rescue boats attached to davits shall have the falls ready for service, and the falls shall be at least long enough to reach the water with the ship at her lightest sea-going draught under unfavourable conditions of trim and listed to 20° either way. Disengaging gear complying with the requirements of Part VII of Schedule 1 or Part IV of Schedule 2, shall be provided for detaching the lifeboat or rescue boat from the falls.

11. *Winches*

11.1 In the case of a multiple drum winch, unless an efficient compensatory device is fitted, the falls shall be so arranged as to wind off the drums at the same rate when lowering, and to wind on to the drums evenly at the same rate when hoisting and the lead blocks shall be arranged to give a fleet angle or angle of lead of not more than five degrees for grooved drums and three degrees for ungrooved drums. In the case of mechanically controlled single-arm davits, the lead of the wire rope fall shall be such that the fall winds evenly on the drum.

11.2 Winch brakes shall be of robust construction and afford complete control and limitation of speed in the operation of lowering. The hand brake shall be so arranged that it is normally in the "ON" position and returns to the "ON" position when the control handle is not being operated. The mass of the brake lever shall be sufficient to operate the brake effectively without additional pressure. The winch brakes shall be of sufficient strength to withstand:

.1 a static test with a proof load of not less than 1.5 times the maximum working load; and

.2 a dynamic test with a proof load of not less than 1.1 times the maximum working load at maximum lowering speed.

11.3 The speed at which the fully laden lifeboat or rescue boat with its equipment and launching crew is lowered into the water shall be not less than that obtained from the formula:

$$S = 0.4 + (0.02 \times H)$$

where S = speed of lowering in metres per second

and H = height in metres from davit head, at the outboard position, to the waterline at the lightest seagoing condition

In the case of a ship where "H" exceeds 30 metres the lowering speeds need not exceed 1 metre per second. The lowering speed of the light craft shall be within 70% of the speed required above.

11.4 Notwithstanding the requirements of paragraph 11.3 the speed of lowering shall not exceed 1.3 metres per second.

11.5 The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in paragraphs 11.3 and 11.4. A ratchet gear shall be incorporated in these winches.

11.6 Hand gear handles shall not be rotated by moving parts of the winch when the lifeboat or rescue boat is being lowered or when it is being hoisted by power. Provision shall be made to allow the falls to be manually unwound.

11.7 The launching mechanism shall be so arranged that it may be actuated by one person from a position on the ship's deck. It should also be operable by one person from within the lifeboat or rescue boat. The launching and recovery arrangements shall be such that the winch operator on the ship's deck is able to observe the craft at all times during launching and recovery.

11.8 When the lowering of the lifeboat or rescue boat is controlled from within the craft by means of a control wire paid off from an auxiliary drum on the winch:—

.1 the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire, when turning out the lifeboat or rescue boat from the stowed position;

.2 the winch brake shall be operable from within the boat;

.3 the winch brake shall not be affected by the mass of the fully extended control wire, nor the wind effects on it;

.4 there shall be sufficient length of control wire available at the boat during all stages of lowering; and

.5 means shall be provided to retain the free end of the control wire in the boat until the boat is detached from the falls.

PART III Regulations 2, 5, 6, 7, 8 and 18

LIFERAFT LAUNCHING APPLIANCES

General

1. *Definition of "Working Load"*

1.1 In this Part the expression "working load" means:—

.1 the sum of the mass of the liferaft and its equipment, all other associated gear that is supported by the launching appliance during the lowering operation and the maximum number of persons which the liferaft is deemed fit to carry, the mass of each person being taken to be 75 kg.

Construction

2. *General*

2.1 Each liferaft launching appliance shall be so constructed that a minimum amount of routine maintenance is necessary. All parts requiring regular maintenance by the ship's crew shall be readily accessible and easily maintained.

2.2 A liferaft launching appliance shall not be solely dependent on the use of means other than manual effort, gravity or stored mechanical power which is independent of the ship's power supplies to launch the liferaft. The arrangements shall be such that the liferaft can be lowered in the fully loaded and equipped condition by gravity.

2.3 The arrangements of the launching appliance shall be such as to enable safe boarding of the liferaft in accordance with the requirements of paragraphs 6.3 or 6.4 of Part I of Schedule 4.

3. *Strength*

3.1 Every launching appliance serving a liferaft which is required by these Regulations to be put into the water when loaded with its full complement of persons shall, together with its winch, falls, blocks and all other associated launching equipment, be of such strength that the liferaft with its full equipment can be safely lowered into the water from the embarkation position with its full complement of persons, when the ship has a list of up to 20° either way and a trim of up to 10°, or such higher angle as may be required by para. 1.2 of Part I of this Schedule.

4. *Stresses*

4.1 Structural members and all blocks, falls, padeyes, links, fastenings and all other fittings used in connection with a launching appliance shall be designed with not less than a minimum factor of safety on the basis of the maximum working load assigned and the ultimate strength of the material used for construction. A minimum factor of safety of 4.5 shall be applied to all davit and winch structural members, and a minimum factor of safety of 6 shall be applied to falls, links and blocks.

5. *Static load test*

5.1 Every launching appliance and its attachments other than the winch brakes shall be capable of withstanding a static test load, in a direction simulating a 20° list and 10° trim or such greater angle as may be required by paragraph 1.2 of Part I of this Schedule, of not less than 2.2 times the maximum working load.

6. *Wires ropes*

6.1 Falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

6.2 The breaking tensile load of each wire rope used for lowering shall be not less than six times the maximum load on the wire rope when lowering, hoisting or stowing.

6.3 Wire ropes shall be securely attached to the drum of the winch, and the end attachments of the wires and other parts from which the liferaft is to be suspended shall be capable of withstanding a proof load of not less than 2.2 times the load on such attachments and other parts.

6.4 Where wire rope splices or ferrule-secured eye terminals are used they shall be capable of withstanding a proof test of not less than 2.2 times the load imposed on them in service.

6.5 The falls of a liferaft launching appliance shall be at least long enough to reach the water with the ship at her lightest sea-going draught under unfavourable conditions of trim and listed to 20° either way.

7. *Winches*

7.1 Winch brakes shall be of robust construction and afford complete control and limitation of speed in the operation of lowering. The hand brake shall be so arranged that it is normally in the "ON" position and returns to the "ON" position when the control handle is not being operated. The mass of the brake lever shall be sufficient to operate the brake effectively without additional pressure. The winch brakes of a launching appliance shall be of sufficient strength to withstand:—

.1 a static load test with a proof load of not less than 1.5 times the maximum working load; and

.2 a dynamic test with a proof load of not less than 1.1 times the maximum working load at the maximum lowering speed.

7.2 The speed at which the fully laden liferaft is lowered into the water shall be not less than that obtained from the formula:

$$S=0.4+(0.02\times H)$$

where S=speed of lowering in metres per second

and H=height in metres from davit head, at the outboard position, to the waterline at the lightest seagoing condition.

In the case of a ship where "H" exceeds 15 metres the lowering speeds need not exceed 0.7 metre per second.

7.3 Notwithstanding the requirements of sub paragraph 7.2 the speed of lowering shall not exceed 1 metre per second.

7.4 The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in paragraphs 7.2 and 7.3. A ratchet gear shall be incorporated in these winches.

7.5 Hand gear handles shall not be rotated by moving parts of the winch when the liferaft is being lowered or hoisted by power.

7.6 The launching mechanism shall be so arranged that it may be actuated by one person from a position on the ship's deck. It shall also be operable by one person from within the liferaft. The launching arrangements shall be such that the winch operator on the ship's deck is able to observe the liferaft at all times during the lowering.

7.7 When the lowering of the liferaft is actuated from within the raft by means of a control wire paid off from an auxiliary drum on the winch:

.1 the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire;

.2 the winch brake shall be operable from within the liferaft;

.3 the winch brake shall not be affected by the mass of the fully extended control wire nor the wind effects on it; and

.4 there shall be sufficient length of control wire available at the liferaft during all stages of lowering.

8. *Release of the liferaft*

8.1 The launching appliance shall be so arranged as to prevent premature release during the lowering of the liferaft but shall be such that on becoming waterborne the raft shall be automatically released from the release hook which shall comply with requirements of Part V of Schedule 4.

PART IV Regulations 2, 7, 8, 10 and 11

INFLATED BOAT LAUNCHING APPLIANCES

General

1. *Definitions*

1.1 In this Part the expression "working load" means the sum of the masses of:—

.1 the inflated boat and its full equipment;

.2 the blocks and falls;

.3 a launching crew of 2 persons each of mass 75 kg.; and

.4 a mass of 60 kg. or the mass of the engine together with its fuel tank and sufficient fuel for two hours operation, whichever is the greater.

1.2 In this Part the expression "inflated boat" means any inflated boat or rigid inflated boat other than a dedicated rescue boat.

Construction

2. *General*

2.1 Every inflated boat launching appliance shall be so constructed to be:

.1 capable of recovering the inflated boat and bringing it on board the ship;

.2 readily available and not stowed or used for any purpose other than the launching of the inflated boat whilst the ship is at sea; and

.3 provided with a suitable means for manual operation.

2.2 Each launching appliance shall be so constructed that the minimum amount of routine maintenance is necessary. All parts requiring regular maintenance by the ship's crew shall be readily accessible and easily maintained.

2.3 A launching appliance shall be dependent only on manual effort, gravity or stored mechanical power which, if the boat is part of the ship's statutory life saving appliances, is independent of the ship's power supplies when used to launch the inflated boat. The arrangement shall be such that the inflated boat can be lowered by gravity when loaded in accordance with paragraph 1.1.3 and 1.1.4 and with its full equipment.

3. *Strength*

3.1 Every launching appliance serving an inflated boat shall, together with its winch if fitted, falls, blocks and other associated lowering gear be of such strength that the inflated boat with its full equipment can be safety lowered into the water from the embarkation position with a complement of 2 persons, when the ship has a list of up to 20 degrees either way and a trim of up to 10 degrees, or such angles as may be required by paragraph 1.2 of Part I of this Schedule.

4. *Stresses*

4.1 Structural members and all blocks, falls, padeyes, links, fastenings and all other fittings used in connection with a launching appliance shall be designed with not less than a minimum factor of safety on the basis of the maximum working load assigned and the ultimate strength of the material used for construction. A minimum factor of safety of 4.5 shall be applied to all structural members and a minimum factor of safety of 6 shall be applied to the falls, links and blocks.

5. *Static load test*

5.1 Every launching appliance and its attachments other than the winch brakes shall be capable of withstanding a static test load, in a direction simulating a 20° list and 10° trim, or such other angle as may be required under paragraph 1.2 of Part I of this Schedule of not less than 2.2 times the maximum working load.

6. *Winches*

6.1 Every such launching appliance shall be provided with a winch when the inflated boat is situated more than 4.5 metres above the lightest sea going waterline.

6.2 Winch brakes shall be of robust construction and afford complete control and limitation of speed in the operation of lowering. The hand brake shall be so arranged that it is normally in the "ON" position and returns to the "ON" position when the control handle is not being operated. The mass of the brake lever shall be sufficient to operate the brake effectively without additional pressure. The winch brakes of a launching appliance shall be of sufficient strength to withstand:—

.1 a static load test with a proof load of not less than 1.5 times the maximum working load; and

.2 a dynamic test with a proof load of not less than 1.1 times the maximum working load at the maximum lowering speed.

6.3 The speed at which the inflated boat is lowered into the water shall be not less than that obtained from the formula:

$$S = 0.4 + (0.02 \times H)$$

where S = speed of lowering in metres per second

and H = height in metres from davit head, at the outboard position, to the waterline at the lightest seagoing condition

In the case of a ship where "H" exceeds 30 metres the lowering speeds need not exceed 1 metre per second.

6.4 Notwithstanding the requirements of paragraph 6.3 the speed of lowering shall not exceed 1.3 metres per second.

6.5 The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in paragraphs 6.3 and 6.4. A ratchet gear shall be incorporated in the winch.

6.6 Hand gear handles shall not be rotated by moving parts of the winch when the inflated boat is being lowered or hoisted by power.

6.7 The launching mechanism shall be so arranged that it may be actuated by one person from a position on the ship's deck. The launching arrangements shall be such that the winch operator on the ship's deck is able to observe the boat at all times during the lowering.

7. *Wire rope falls*

7.1 Wire rope falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

7.2 The breaking tensile load of each wire rope used for lowering shall be not less than six times the maximum load on the wire rope when lowering, hoisting or stowing.

7.3 Wire ropes shall be securely attached to the drum of the winch, and the end attachments of the wires and other parts from which the inflated

boat is to be suspended shall be capable of withstanding a proof load of not less than 2.2 times the load on such attachments and other parts.

7.4 Where wire rope splices or ferrule-secured eye terminals are used they shall be capable of withstanding a proof test of not less than 2.2 times the load imposed on them in service.

7.5 The falls of the inflated boat launching appliance shall be at least long enough to reach the water with the ship at her lightest sea-going condition under unfavourable conditions of trim and listed to 20° either way.

8. *Cordage rope falls*

8.1 Cordage rope falls shall be of manila or some other suitable material and shall be durable, unkinkable, firm laid and pliable. They shall be able to pass freely under any conditions through a hole 10 millimetres larger than the nominal diameter of the rope. The breaking load of each rope used for lowering inflated boats shall be not less than 6 times the maximum load on the rope when lowering or hoisting. Winding reels or flaking boxes for the manila rope falls shall be provided.

8.2 Such falls shall be at least long enough to reach the water with the ship at her lightest sea-going condition and listed to 20° either way.

9. *Bollards*

9.1 Suitable bollards or other equally effective appliances for lowering any inflated boat shall be provided in all cases where cordage rope falls are used. Such bollards or other appliances shall be sited so as to ensure that the inflated boat served by them can be safely lowered, the fairleads or lead sheaves shall be fitted so as to ensure that it shall not be lifted during the process of turning out or swinging out.

Regulations 2 and 15 PART V

EMBARKATION LADDERS

1. *Construction*

1.1 The steps of the embarkation ladder shall be:—

.1 made of hardwood, free from knots or other irregularities, smoothly machined and free from sharp edges and splinters, or of suitable material of equivalent properties;

.2 provided with an efficient non-slip surface either by longitudinal grooving or by the application of an approved non-slip coating;

.3 not less than 480 mm. long, 115 mm. wide and 25 mm. in depth, excluding any non-slip surface or coating;

.4 equally spaced not less than 300 mm. or more than 380 mm. apart and secured in such a manner that they will remain horizontal.

1.2 The side ropes of the embarkation ladder shall consist of two uncovered manila ropes not less than 65 mm. in circumference on each side. Each rope shall be continuous with no joints below the top step. Other materials may be used provided the dimensions, breaking strain, weathering, stretching and gripping properties are at least equivalent to those of manila rope. All ends shall be seized or secured to prevent unravelling.

SCHEDULE 7

Schedule 1, Part I, Schedule 2, Parts I, II and III, Schedule 3 and Schedule 4, Part IV

REQUIREMENTS FOR SURVIVAL CRAFT AND RESCUE BOAT EQUIPMENT

PART I

SEA ANCHORS

1. A sea anchor shall be conical in shape and have the following dimensions:

CRAFT	SEA ANCHOR		
	Minimum Mouth Diameter (mm)	Minimum Sloping Length (mm)	Minimum Sloping Length of Shroud Lines (mm)
Liferafts up to 10 person capacity	400	600	600
Liferafts 11 person capacity up to 25 person capacity and inflated boats	500	670	670
Liferafts over 25 person capacity, lifeboats and rescue boats up to 6 m in length	600	780	780
Lifeboats and rescue boats over 6 m in length and up to 9 m in length	700	920	920
Lifeboats over 9 m in length	800	1050	1050

2. The sea anchor material shall be porous, slightly stiff and shall allow a water penetration of between 10 and 12 cubic centimetres per second per square centimetre at a pressure of 550Pa (roughly equivalent to a speed through water of 2 knots).

3. The painter line used to secure the sea anchor to a liferaft or boat shall:

.1 be inherently rot proof and of braided construction,

.2 be 30 metres long; not less than 8 mm. in diameter and have a breaking load including attachments and knots of not less than:—

.1 7.5 kN for liferafts up to 10 person capacity;

.2 10.0 kN for liferafts of 11 person to 25 person capacity;

.3 10.0 kN for all other sea anchors or have a factor of safety of 3:1 based on a tow test at 6 knots whichever is the greater.

4. The shroud lines shall be designed to restrict the sea anchor from tumbling through itself.

5. The sea anchor shall be stable when towed through the water at speeds up to 6 knots.

6. The sea anchor mouth shall open immediately on deployment.

Schedule 1, Part I,
Schedule 2, Parts I, II and III,
Schedule 3,
Schedule 4, Part IV

PART II

FIRST AID OUTFIT

1. The first aid outfit provided in every lifeboat, rescue boat, inflated boat or liferaft carried by the vessel shall comply with the following requirements:—

.1 It shall be packed in a durable, damp-proof and effectively sealed container capable of being closed tightly after use.

.2 The container shall be protected, until opened for use, with an outer waterproof seal.

.3 The container shall bear on its outside an itemised list of its contents, and their date of expiry.

.4 It shall include the following items, each of which must comply with any standard or requirements specified in relation to it in the current issue of the British Pharmacopoeia, the British Pharmaceutical Codex or the National Formulary:—

ARTICLE	*QUANTITY*
.1 Triangular Bandage Calico Sterile BPC [not less than 90 cm sides, 127 cm base]	4
.2 Standard Dressing BPC Sterile Unmedicated Extra Large 28 cm×17.5 cm	2
.3 Standard Dressing BPC Sterile Unmedicated Large 20 cm×15 cm	2
.4 Standard Dressing BPC Sterile Unmedicated 15 cm×10 cm	2
.5 Open Weave Bandage BPC 7.5 cm×3.5 m	6
.6 Waterproof Plasters I/W Sterile BPC 3.8 cm×3.8 cm	10
7.5 cm×2.5 cm	10
.7 Paraffin Gauze Dressings I/W Sterile for Burns 40 cm×10 cm	4
10 cm×10 cm	6
.8 Polythene Bags (to cover burns on limbs)	

38.5 cm×22.5 cm with adhesive tie	2
.9 Cetrimide Cream 0.5% W/W 50 gm tube	2
.10 Analgesic Tablets: Paracetamol 500 milligrams in Container clearly labelled with name and directions for use	50
.11 Scissors, rustless and stainless steel, blunt points 10 cm	1
.12 Safety pins, assorted rustless [minimum size 5 cms]	6
.13 First Aid Instructions in English printed on waterproof material	

PART III — Schedule 1, Part I, Schedule 4, Part IV

FOOD RATIONS

1. The ration for each one or two persons shall be enclosed in substantial packaging including suitable efficiently sealed oxygen impermeable and moisture-proof materials. A ration intended for a lifeboat shall additionally be protected by durable water resistant packaging.

2. The outer packaging or wrapping shall be marked with the manufacturer's name or trade mark, the weight, calorific value and description of the contents, the dates of manufacture and renewal and the words "DOT (UK) APPROVED". The description of the contents shall also be marked on the inner packaging. It shall be possible to open the wrapping and packaging with wet or cold hands.

3. Recommended quantities of ration and of fresh water to be consumed daily shall be marked in English on the packaging or on a water resistant instruction sheet included in the ration.

4. The ration for each person shall have a calorific value of not less than 10,000 kilojoules.

5. The composition of the ration shall be as follows:—

5.1 The ration shall include at least 300 grammes of carbohydrate in the form of bland barley sugar sweets, glucose tablets or as part of a food tablet. The ration shall not include protein at a greater rate than 3 grammes per 10 grammes of carbohydrate or fat at a greater rate than 4 grammes per 10 grammes of carbohydrate.

5.2 The salt content in the ration shall be as low as possible and must never exceed 1 gramme NaCl. If the ration includes an approved anti-oxidant it shall be included at the rate of 0.02% by weight of the fat component of the ration.

5.3. The moisture content of barley sugar and of a food tablet shall not exceed 3% and 7% by weight respectively. The moisture content of a glucose tablet shall be as low as possible and compatible with the recommended operational shelf-life.

6. The ration shall be palatable to a survivor limited to a fresh water intake of 0.5 litres per day.

7. The ration shall remain palatable throughout the recommended shelf-life of the ration under extremes of climatic conditions normally encountered.

8. The ration shall be readily divisible into at least 3 one day portions for one person.

Schedule 3, Part I,
Schedule 4, Part IV

PART IV

FRESH WATER

1. *General*

.1 The water shall comply with the UK Laboratory of the Government Chemist test requirements to confirm that the water is microbiologically and chemically suitable for drinking and conforms to World Health Organisation Standards.

.2 Processing, packaging and sterilisation arrangements shall be carried out under hygienic conditions and quality assurance inspection acceptable to the Department of Transport

.3 The water shall remain palatable in its stowage in the survival craft throughout a temperature range of −30°C to +65°C.

2. *Water Containers*

2.1 SACHETS

.1 The water shall be packed in efficiently sealed sachets which are impermeable moisture proof and have an effective vapour barrier.

.2 The sachets shall have a cut above the top seal to facilitate easy opening with wet or cold hands.

.3 Individual sachets shall contain not less than 50 and not more than 150 millilitres of water.

.4 Water filled sachets shall be capable of withstanding a compressive load test of 5 kilonewtons without bursting.

.5 Except as provided in para 2.1.6 water sachets packed in a liferaft emergency pack shall not be affected by any of the prototype tests carried out on a liferaft.

.6 When included in the emergency pack of an operationally packed liferaft there shall be no more than 2% of the water sachets damaged after the appropriate drop test.

.7 The recommended shelf life of the water sachets shall be at least 3 years.

.8 The outer packaging shall be marked with the following information:—

.1 manufacturers' name or trade mark;

.2 contents capacity;

.3 lot number;

.4 date of manufacture;

.5 a recommended daily consumption per person;

.6 DOT (UK) approved.

2.2 CANS

.1 A can in which drinking water is supplied shall be hermetically sealed and have a vacuum of not less than 510 mm of mercury.

.2 It shall be constructed of tinplate of minimum thickness 0.30 mm and with a tin content which will conform with the relevant part of British Standard 113 Section 10.

.3 It shall be constructed with a double seam and properly balanced interlocking hooks.

.4 It shall be plain internally, but externally it shall be coated with a machine applied golden lacquer and then stoved.

.5 After filling the seams shall be inspected, and any exposed areas shall be suitably lacquered.

.6 A click test to confirm the vacuum shall be carried out on each can 7 days after filling.

.7 The can shall be free from dents or any signs of corrosion.

.8 The capacity of the can shall not be greater than 500 millilitres.

.9 The can shall not be affected by any of the prototype tests carried out on a liferaft.

.10 The can shall be clearly marked on the outside with:—

.1 manufacturer's name or trade mark;

.2 drinking water and capacity in millilitres;

.3 lot or batch number;

.4 date of manufacture;

.5 a recommended daily consumption per person;

.6 DOT (UK) approved.

2.3 BOTTLES

.1 A bottle in which drinking water is supplied shall be manufactured from a material which will not contaminate or effect the taste of the water.

.2 It shall not be affected by any other prototype tests carried out on a liferaft.

.3 The material from which the bottle is made shall be opaque.

.4 The capacity of the bottle shall not be greater than 500 millilitres.

.5 The bottle shall be capable of being opened by a survivor with cold hands.

.6 The minimum recommended shelf life of the water bottle and its contents shall be at least 3 years.

.7 The bottle filling cap shall be fitted with a watertight seal, and have positive locking arrangements which will not be loosened by vibration.

.8 After the bottle has been filled, and the cap fitted, it shall be provided with an outer continuous seal which must not be broken until the water is used, or has become time expired.

.9 The bottle shall be marked on the outside with:—

.1 manufacturer's name or trade mark;

.2 date of filling;

.3 date of expiry;

.4 drinking water and capacity in millilitres;

.5 recommended daily consumption per person;

.6 lot or batch number;

.7 DOT (UK) approved.

3. *Water tanks*

.1 Tanks fitted for fresh water in a survival craft may be of metal or a plastic material acceptable to the Department of Transport.

.2 Each tank is to be filled and emptied to ensure cleanliness and to check for watertightness.

.3 The tank shall be strong enough to withstand a head of water of at least 1.5 metres.

.4 Where necessary the inside of the tank shall be suitably coated to prevent contamination or unpleasant taste.

.5 Tanks which are not portable shall be fitted with drain plugs constructed of non-corrosive material.

.6 Filling plugs and aperture covers shall be of non-ferrous materials, neatly fitted and made properly watertight to prevent the entry of contaminants.

.7 Tanks shall be sited well clear of any propelling machinery.

.8 At least one rustproof dipper with a lanyard shall be provided for each tank.

.9 The inside of tanks constructed with glass reinforced plastic must be smooth and sealed with a gel coat.

.10 Tanks made out of glass reinforced plastic shall be opaque.

.11 The tank shall be clearly marked on the outside with the contents and its capacity in litres.

PART V Schedule 1, Part I,
Schedule 2, Parts I, II and III

LIFEBOAT AND RESCUE BOAT COMPASSES

1. Every compass shall be of the liquid type. The liquid used shall be a mixture of industrial methylated spirit and water, SG 0.93 at 15°C, or other suitable liquid of equivalent properties. The compass shall function efficiently over a temperature range of −30°C to +65°C without leakage, formation of bubbles or other defects. The liquid shall be colourless and free from turbidity and formation of flocks.

2. The magnet shall have ample directive force. In the United Kingdom a period of 6 to 22 seconds after a deflection of 40 degrees at a temperature of 15°C ± 2°C shall be deemed to indicate compliance with this requirement. The "period" is defined as the time taken for a complete oscillation of the card after being released from a deflection of 40 degrees, swinging past the position of rest, and back again to the completion of its swing on the side to which it was originally deflected.

3. Over a temperature range of −30°C to +65°C, the supporting force of the immersed card system on the pivot shall be between 0.04 and 0.10 newtons.

4. The compass card shall be not less than 60 mm. in diameter. When the diameter of the card is less than 100 mm, magnification of the card shall be incorporated to allow a person with normal vision to read the compass at a distance of not less than one metre. The card shall be graduated in 5 degree intervals, with a numerical indication at least every 30 degrees. The cardinal points shall be distinctively marked. Edge graduations, where provided, shall be at 5 degree intervals with numerical indication at least every 30 degrees. The compass shall be fitted with a lubber line or point and the compass card shall be luminised or provided with a suitable means of illumination which does not include the use of an oil lamp. If only part of the card is visible (or if magnification is used) it shall be possible to read a minimum of 15 degrees on either side of the lubber mark.

5. The centre of the card shall be of sapphire or equally hard jewel.

6. The pivot of the card shall be of iridium or equally hard material.

7. The compass shall be so constructed that the compass card remains horizontal and readable when the binnacle or housing is tilted to 40 degrees from the upright in any direction. When an external gimbal system is fitted, the card shall remain free when the bowl is tilted by 10 degrees.

8. The direction of the lubber line or point from the centre of the card shall lie in the same vertical plane as the outer gimbal axis or other fore and aft datum line. The cumulative effect of card, pivot, directional and other similar errors, and of inaccurate positioning of the lubber's point shall be such that in

the undisturbed earth's field the direction as read on the card against the lubber's point shall not differ by more than 3 degrees from the magnetic direction of the outer gimbal axis or other fore and aft datum line for any direction of the latter.

9. The compass shall be provided with a binnacle or housing of non-magnetic material which shall be so constructed or marked that the direction of the fore and aft line can be identified. Means for fixing in place shall be provided. The mounting of the directional system in the compass bowl shall be constructed in such a manner that it returns to the original position on its pivot when the bowl is inverted and then returned to its normal position.

10. The strength and durability of the materials used, and the quality of manufacture shall be such that the compass will remain efficient under sea-going conditions. Any paint inside the bowl shall show no signs of blistering.

11. The bowl of the compass, or the housing, if integral with the bowl shall be permanently marked with the maker's name or other identification mark.

Regulations 2, 5, 6, 7, 8, 10, 11 and 24

SCHEDULE 8

REQUIREMENTS FOR PYROTECHNIC SIGNALS AND LINE-THROWING APPLIANCES

PART I

ROCKET PARACHUTE FLARES

1. *Construction*

1.1 A rocket parachute flare shall:

.1 be constructed with proper workmanship and materials;

.2 be contained in a water-resistant casing;

.3 have integral means of ignition which can be readily operated with wet, cold or gloved hands in adverse conditions and require the minimum of preparation;

.4 be so designed that it shall not cause discomfort to the person holding the casing when used in accordance with the manufacturer's operating instructions;

.5 be so constructed that any sealing shall not depend on adhesive tapes, or plastic envelopes;

.6 be so constructed that the end from which the rocket is ejected can be positively identified by day or night;

.7 be so constructed that all components, compositions and ingredients of the signal and the means of igniting it shall be of such character and quality to enable the signal to maintain its serviceability under good average storage conditions in the marine environment for a period of at least 3 years;

.8 be so constructed that if it is intended to be stowed in a liferaft it can function effectively after being subjected to a drop test appropriate to the height at which the liferaft is to be stowed, when the signal is packed in the equipment container.

2. *Performance*

2.1 A rocket parachute flare shall not be damaged in stowage throughout the air temperature range of −30°C to +65°C

2.2 A rocket shall, when fired vertically, reach an altitude of not less than 300 metres. At or near the top of its trajectory, the rocket shall eject a parachute flare, which shall:

.1 burn with a bright red colour;

.2 burn uniformly with an average luminous intensity of not less than 30,000 candela;

.3 have a burning period of not less than 40 seconds;

.4 have a rate of descent of not more than 5 metres/second;

.5 not damage its parachute or attachments while burning.

2.3 The rocket shall in addition be capable of functioning when the rocket is fired at an angle of 45° to the horizontal.

3. *Marking*

3.1 A rocket parachute flare shall have brief instructions or diagrams clearly illustrating the use of the rocket parachute flare printed on its casing.

3.2 The date of manufacture and the date of expiry shall be marked indelibly on the casing.

3.3 The words "DOT (UK) APPROVED" shall be marked indelibly on the casing.

PART II

Regulations 2 and 24, Schedule 1, Part I and Schedule 4, Part IV

HAND FLARES

1. *Construction*

1.1 A hand flare shall:

.1 be constructed with proper workmanship and materials;

.2 be contained in a water-resistant casing;

.3 have a self-contained means of ignition which can be readily operated with wet, cold or gloved hands in adverse conditions and require the minimum preparation;

.4 be so designed as not to cause discomfort to the person holding the casing with an uncovered hand and not endanger a lifeboat or liferaft by burning or glowing residues when used in accordance with the manufacturer's operating instructions;

.5 be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes;

.6 be so constructed that the end from which the light is emitted can be positively identified by day and night;

.7 be so constructed that all components, compositions and ingredients of the flare and the means of igniting it shall be of such character and quality to enable the flare to maintain its serviceability under good average storage conditions in the marine environment for a period of at least 3 years.

.8 be so constructed that if it is intended to be stowed in a liferaft it can

function effectively after being subjected to a drop test appropriate to the height at which the liferaft is to be stowed, when the signal is packed in the equipment container.

2. *Performance*

2.1 A hand flare shall not be damaged in stowage throughout the air temperature range of −30°C to +65°C.

2.2 A hand flare shall:

.1 burn with a bright red colour;

.2 burn uniformly with an average luminous intensity of not less than 15,000 candela;

.3 have a burning period of not less than 1 minute;

.4 after ignition continue to burn after having been immersed for a period of 10 seconds under 100 mm. of water.

3. *Marking*

3.1 A hand flare shall have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing.

3.2 The date of manufacture and the date of expiry shall be marked indelibly on the casing.

3.3 The words "DOT (UK) APPROVED" shall be marked indelibly on the casing.

Regulations 2 and 24, Schedule 1, Part I and Schedule 4, Part IV

PART III

BUOYANT SMOKE SIGNALS

1. *Construction*

1.1 A buoyant smoke signal shall:

.1 be constructed with proper workmanship and materials;

.2 be contained in a water-resistant casing;

.3 have an integral means of ignition which can be readily operated with wet, cold or gloved hands in adverse conditions;

.4 be so designed to enable the signal to be released from a survival craft without harm to the occupants;

.5 be so designed that it shall not ignite explosively when used in accordance with the manufacturer's operating instructions;

.6 be so constructed that all components, compositions and ingredients of the signal and the means of igniting it shall be of such character and quality to enable the signal to maintain its serviceability under good average conditions in the marine environment for a period of at least 3 years;

.7 be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes;

.8 be so constructed that if it is intended to be stowed in a liferaft it can function effectively after being subjected to a drop test appropriate to the height at which the liferaft is to be stowed, when the signal is packed in the equipment container.

2. *Performance*

2.1 A buoyant smoke signal shall not be damaged in stowage throughout the air temperature range of −30°C to +65°C.

2.2 It shall be capable of satisfactory operation in a seaway.

2.3 A buoyant smoke signal shall:

.1 emit smoke of a highly visible colour at a uniform rate for a period of not less than 3 minutes when floating in calm water;

.2 not emit any flame during the entire smoke emission time;

.3 not be swamped in a seaway;

.4 continue to emit smoke when submerged in water for a period of 10 seconds under 100 mm. of water.

2.4 It shall be safe to operate in water covered by a low flash point liquid.

3. *Marking*

3.1 A buoyant smoke signal shall have brief instructions or diagrams clearly illustrating the use of the smoke signal printed on its casing.

3.2 The date of manufacture and the date of expiry shall be marked indelibly on the casing.

3.3 The words "DOT (UK) APPROVED" shall be marked indelibly on the casing.

PART IV Regulations 2, 9, 11 and 24

RED STAR DISTRESS ROCKET SIGNALS

1. *Construction*

1.1 A red star distress rocket signal shall:

.1 be constructed with proper workmanship and materials;

.2 be contained in a water-resistant casing;

.3 have integral means of ignition which can be readily operated with wet, cold or gloved hands in adverse conditions and require the minimum of preparation;

.4 be so designed that it shall not cause discomfort to the person holding the casing when used in accordance with the manufacturer's operating instructions;

.5 be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes;

.6 be so constructed that the end from which the rocket is ejected can be positively identified by day or night;

.7 be so constructed that all components, compositions and ingredients of the signal and the means of igniting it shall be of such character and quality to enable the signal to maintain its serviceability under good

average storage conditions in the marine environment for a period of at least 3 years.

2. *Performance*

2.1 A red star distress rocket signal shall not be damaged in stowage throughout the air temperature range of −30°C to +65°C.

2.2 A red star distress rocket signal shall be capable of emitting two or more red stars either together or separately, when projected to the required height by means of a rocket.

2.3 When fired vertically the stars shall be ejected at or before the top of the trajectory at a minimum height of 45 metres and each star shall:

.1 burn with a bright red colour;

.2 burn uniformly with an average luminous intensity of not less than 5,000 candela;

.3 have a burning period of not less than 5 seconds.

2.4 The signal shall in addition be capable of functioning when the rocket is fired at an angle of 45° to the horizontal.

3. *Marking*

3.1 A red star distress rocket signal shall have brief instructions or diagrams clearly illustrating the use of the signal printed on its casing.

3.2 The date of manufacture and the date of expiry shall be marked indelibly on the casing.

3.3 The words "DOT (UK) APPROVED" shall be marked indelibly on the casing.

Regulations 2, 5, 6, 7, 8, 10, 11 and 24

PART V

LINE-THROWING APPLIANCES

1. *Construction*

1.1 A line-throwing appliance shall:

.1 be constructed with proper workmanship and materials;

.2 in the case of an integral rocket and line, be contained in a water-resistant casing; in the case of a pistol fired rocket, the rocket shall be contained in a water-resistant casing;

.3 include not less than four projectiles;

.4 include not less than four lines each having a breaking strength of not less than 2 kilonewtons;

5. be so designed that the end from which the rocket is ejected can be positively identified by day or night.

1.2 Rockets, cartridges and ignitors shall be so constructed that all components, compositions and ingredients shall be of such character and quality to maintain serviceability under good average storage conditions in the marine environment for a period of at least 3 years.

1.3 Rockets, cartridges and ignitors shall be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes.

2. *Performance*

2.1 A line-throwing appliance shall not be damaged in stowage throughout the air temperature range of −30°C to +65°C.

2.2 A line-throwing appliance shall be capable of throwing a line minimum of 4 mm. in diameter a distance of at least 230 metres in calm weather.

2.3 A line-throwing appliance shall be capable of throwing a line in such a manner that the lateral deflection on either side of the direction of firing does not exceed 10% of the length of flight of the rocket in calm weather.

3. *Marking*

3.1 A line-throwing appliance shall be marked with brief instructions or diagrams clearly illustrating the use of the appliance.

3.2 The date of manufacture and the date of expiry shall be marked indelibly on the rockets, cartridges and ignitors.

3.3 The words "DOT (UK) APPROVED" shall be marked indelibly on the casing.

PART VI Schedule 12, Part I

INSTRUCTIONS, INFORMATION AND STOWAGE

1. Instructions and information for the pyrotechnic signals specified in Part I to IV and for the line-throwing appliance specified in Part V of this Schedule and required for inclusion in the training manual specified in Part I of Schedule 12 shall be in a form suitable for inclusion in such a training manual. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 description of item;

.2 method of use including any precautions or warnings;

.3 stowage;

.4 guidance on when to use; and

.5 instructions for replacing rockets, cartridges or strikers (integral line-throwing appliance).

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 21

SCHEDULE 9

REQUIREMENTS FOR LIFEBUOYS AND ATTACHMENTS

PART I

LIFEBUOYS (SOLAS)

1. *Construction*

.1 A lifebuoy shall be constructed with proper workmanship and materials.

.2 As applicable the materials of a lifebuoy shall be rot-proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal attack.

.3 A lifebuoy shall be of a highly visible colour.

.4 It shall be fitted on each side at four evenly spaced points with a piece of retro-reflective material 50 mm.×100 mm. in size.

.5 A lifebuoy shall have an outer diameter of not more than 800 mm. and an inner diameter of not less than 400 mm..

.6 A lifebuoy shall be constructed of inherently buoyant material. It shall not depend upon rushes, cork shavings or granulated cork, any other loose granulated material or any air compartment which depends on inflation for buoyancy.

.7 It shall have a mass of not less than 2.5 kg. provided that if intended to operate a quick release arrangement for a self-activating smoke signal and self-igniting light it shall have a mass sufficient to operate the quick release arrangement or 4 kg., whichever is the greater.

.8 It shall be constructed to withstand a drop into water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 metres, whichever is the greater, without impairing either its operating capability or that of its attached components.

.9 It shall be fitted with a grabline not less than 9.5 mm. in diameter and of length not less than 4 times the outside diameter of the lifebuoy. The grabline shall be secured at four equidistant points around the circumference of the lifebuoy to form four equal loops.

2. *Performance*

.1 A lifebuoy shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.2 It shall operate throughout a sea-water temperature range of −1°C to +30°C.

.3 A lifebuoy shall be resistant to deterioration from exposure to sunlight.

.4 It shall be capable of satisfactory operation in a seaway.

.5 A lifebuoy shall be capable of supporting not less than 14.5 kg. of iron in fresh water for a period of 24 hours.

.6 It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

3. *Marking*

.1 A lifebuoy shall be marked in block capitals of the Roman alphabet with the name and, except in the case of ships of Class XII, the port of registry of the ship on which it is carried.

.2 A lifebuoy constructed of synthetic materials shall be permanently marked with the manufacturer's trade mark or trade name of the lifebuoy and the words "DOT (UK) APPROVED".

.3 A lifebuoy shall be permanently marked with the maximum height above the waterline at which it can be stowed if this exceeds 30 metres.

PART II Regulations 9, 10 and 21

LIFEBUOYS (610 MM)

1. *Construction*

.1 A lifebuoy shall be constructed with proper workmanship and materials.

.2 As applicable the materials of a lifebuoy shall be rot-proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal attack.

.3 A lifebuoy shall be of a highly visible colour.

.4 It shall be fitted on each side at four evenly spaced points with a piece of retro-reflective material 50 mm.×100 mm. in size.

.5 A lifebuoy shall have an outer diameter of not less than 610 mm. and an inner diameter of not less than 350 mm..

.6 A lifebuoy shall be constructed of inherently buoyant material. It shall not depend upon rushes, cork shavings or granulated cork, any other loose granulated material or any air compartment which depends on inflation for buoyancy.

.7 It shall have a mass of not less than 1.3 kg. provided that if intended to operate the quick release arrangement for a self-activating smoke signal and self-igniting light it shall have a mass sufficient to operate the quick release arrangement or 4 kg. whichever is the greater.

.8 It shall be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 10 metres, whichever is the greater, without impairing either its operating capability or that of its attached components.

.9 It shall be fitted with a grabline not less than 6 mm. in diameter and of length not less than 4 times the outside diameter of the lifebuoy. The grabline shall be secured at four equidistant points around the circumference of the lifebuoy to form four equal loops.

2. *Performance*

.1 It shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.2 It shall operate throughout a sea-water temperature range of −1°C to +30°C.

.3 A lifebuoy shall be resistant to deterioration from exposure to sunlight.

.4 It shall be capable of satisfactory operation in a seaway.

.5 A lifebuoy shall be capable of supporting not less than 10.5 kg. of iron in fresh water for a period of 24 hours.

.6 It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

3. *Marking*

.1 A lifebuoy shall be marked in block capitals of the Roman alphabet with the name and, except in the case of ships of Class XII, the port of registry of the ship on which it is carried.

.2 A lifebuoy constructed of synthetic materials shall be permanently marked with the manufacturer's trade mark or trade name of the lifebuoy and the words "DOT (UK) APPROVED".

.3 A lifebuoy shall be permanently marked with the maximum height above the waterline at which it can be stowed.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 21

PART III

LIFEBUOY SELF-IGNITING LIGHTS

1. *Construction*

.1 A lifebuoy self-igniting light shall be constructed with proper workmanship and materials.

.2 As applicable the materials of a lifebuoy self-igniting light shall be rot-proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal attack.

.3 It shall be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 metres, whichever is the greater, without impairing either its operating capability or that of the lifebuoy to which it is attached.

.4 It shall be provided with means for being efficiently attached to a lifebuoy.

.5 A lifebuoy self-igniting light to be attached to a lifebuoy carried by a tanker shall be of an electric battery type.

.6 Components of electronic circuits shall comply with the quality control requirements of BS 9000 or an equivalent standard. Where components cannot be obtained under one of the above standards these components shall be covered by a Certificate of Conformance from the manufacturer of the components.

2. *Performance*

.1 A lifebuoy self-igniting light shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.2 It shall operate throughout a sea-water temperature range of −1°C to +30°C.

.3 It shall be resistant to deterioration from exposure to sunlight.

.4 It shall be capable of satisfactory operation in a seaway.

.5 A lifebuoy self-igniting light shall be such that it cannot be extinguished by water.

.6 It shall be capable of either burning continuously with a luminous intensity of not less than 2 candela in all directions of the upper hemisphere or flashing (discharge flashing) at a rate of not less than 50 flashes per minute with at least the corresponding effective luminous intensity and be provided with a source of energy which will give this performance for a period of at least 2 hours.

3. *Marking*

A lifebuoy self-igniting light shall be marked indelibly with:—

.1 the manufacturer's name or trade mark;

.2 the words "DOT (UK) APPROVED";

.3 clear and concise directions for use in English supported where necessary by illustrations;

.4 type of energy source;

.5 date of manufacture and expiry in the case of a light with a non-replaceable energy source; and

.6 maximum height above waterline at which it can be stowed.

4. *Instructions and Information*

4.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and, if appropriate, in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such a training manual or instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 the stowage of the light and attachment to lifebuoy;

.2 type of energy source and if replaceable, method and frequency of replacement;

.3 type of light source and whether replaceable;

.4 any maintenance requirements including the method and recommended frequency of checks of energy source if energy source capable of checking; and

.5 operation of light and duration.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 21

PART IV

LIFEBUOY SELF-ACTIVATING SMOKE SIGNALS

1. *Construction*

.1 A lifebuoy self-activating smoke signal shall be constructed with proper workmanship and materials.

.2 As applicable the materials of a lifebuoy self-activating smoke signal shall be rot-proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal attack.

.3 It shall be constructed to withstand a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 metres, whichever is the greater, without impairing either its operating capability or that of the lifebuoy to which it is attached.

.4 It shall be provided with means for being efficiently attached to a lifebuoy.

.5 A lifebuoy self-activating smoke signal may also be provided with a self-igniting light which shall comply with the requirements of Part III of this Schedule.

2. *Performance*

.1 A lifebuoy self-activating smoke signal shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.2 It shall operate throughout a sea-water temperature range of −1°C to +30°C.

.3 It shall be resistant to deterioration from exposure to sunlight.

.4 It shall be capable of satisfactory operation in a seaway.

.5 A lifebuoy self-activating smoke signal shall emit smoke of a highly visible colour at a uniform rate for a period of at least 15 minutes when floating in calm water.

.6 It shall not ignite explosively or emit any flame during the entire smoke emission time of the signal.

.7 It shall not be swamped in a seaway.

.8 It shall continue to emit smoke when fully submerged for a period of at least 10 seconds.

.9 It shall be capable of quick release from its stowed position.

.10 It shall be safe to operate in waters covered by a low flashpoint liquid.

.11 All components, composition and ingredients of the lifebuoy self-activating smoke signal, and the energy source of the self-igniting light if provided shall be of such character and quality as to enable them to maintain their serviceability under good average stowage conditions in the marine environment for a period of at least three years, unless in the case of a self-igniting light energy source it is possible to readily renew the energy source.

3. *Marking*

A lifebuoy self-activating smoke signal shall be marked indelibly with:—

.1 the manufacturer's name or trade mark;

.2 the lot number or other means of identifying the signal;

.3 the words "DOT (UK) APPROVED";

.4 clear and concise directions for use in English supported where necessary by illustrations;

.5 the date of manufacture and date of expiry;

.6 type of energy source in the case of a signal provided with a self-activating light; and

.7 maximum height above the waterline at which it can be stowed.

4. *Instructions and Information*

4.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and, if appropriate, in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such a training manual or instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 the stowage of signal and attachment to lifebuoy;

.2 type of energy source of self-igniting light if provided and if replaceable, method and frequency of replacement;

.3 type of light source of self-igniting light if provided and whether replaceable;

.4 any maintenance requirements including the method, and recommended frequency of checks of energy source of self-igniting light if provided and if energy source capable of checking; and

.5 operation of signal and duration.

PART V Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 21

LIFEBUOY BUOYANT LIFELINES

1. *Construction*

.1 A lifebuoy buoyant lifeline shall be non-kinking.

.2 It shall have a diameter of not less than 8 mm..

.3 It shall have a breaking strength of not less than 5 kilonewtons.

.4 It shall be resistant to deterioration from exposure to sunlight.

.5 It shall have a length not less than twice the height at which it is stowed above the waterline in the lightest seagoing condition, or 30 metres, whichever is the greater. On ships of less than 12 metres in length the lifeline shall be at least 18 metres in length.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 22

SCHEDULE 10

REQUIREMENTS FOR LIFEJACKETS AND ATTACHMENTS

PART I

INHERENTLY BUOYANT LIFEJACKETS

Inherently buoyant lifejackets for persons weighing 32 kg. or over shall comply with the following requirements:

1. *Construction*

1.1 An inherently buoyant lifejacket shall be constructed with proper workmanship and materials.

1.2 An inherently buoyant lifejacket shall be so constructed that:

.1 after demonstration, a person can correctly don it within a period of 1 minute without assistance;

.2 it is capable of being worn inside out or is clearly capable of being worn in only one way and, as far as is possible, cannot be donned incorrectly;

.3 it is comfortable to wear;

.4 it allows the wearer to jump from a height of at least 4.5 metres into the water without injury and without dislodging or damaging the lifejacket.

1.3 It shall be so constructed that the buoyancy is not reduced by more than 5% after 24 hours submersion in fresh water.

1.4 It shall be fitted with a whistle firmly secured by a cord of suitable length. The whistle shall be non-metallic and not be adversely affected by water or humidity.

1.5 It shall be fitted with an approved light if it is intended for a ship which is required to carry lifejackets fitted with lights.

1.6 It shall be fitted with retro-reflective material where it will assist in detection, and the dimensions and location of the material shall be to the satisfaction of the Secretary of State.

1.7 It shall be fitted with a ring or loop or similar device of adequate strength to facilitate rescue.

2. *Materials*

2.1 As applicable, the materials of a lifejacket shall be rot-proof, corrosion resistant, not be unduly affected by sea-water, oil or fungal attack, and shall be resistant to deterioration due to exposure to sunlight.

2.2 Buoyancy material shall be of good quality synthetic material, or kapok.

2.3 Cover material where used shall be of good quality synthetic material, or pre-shrunk cotton material free of admixture of sizing or other foreign matter.

2.4 Cover material shall be of a highly visible colour such as traffic yellow (BS 381, Ref 368) international orange (BS 381, Ref 592) or a colour of equivalent conspicuity.

2.5 Where a synthetic cover material is used and the seams are stitched, the thread shall be of synthetic material. Where a cotton cover material is used the thread shall be of natural fibre or a combination of synthetic and natural fibre.

2.6 Fastening tapes shall be not less than 32 mm. wide and have a breaking strength of not less than 1.4 kilonewtons. Tapes of a synthetic material shall be capable of providing an equivalent degree of security when tied as that provided by cotton tapes.

3. *Performance*

3.1 An inherently buoyant lifejacket shall not be damaged in stowage throughout an air temperature range of −30°C to +65°C.

3.2 It shall operate throughout a sea-water temperature range of −1°C to +30°C.

3.3 It shall be capable of satisfactory operation in a sea-way.

3.4 It shall have sufficient buoyancy and stability in calm fresh water to:—

.1 lift the mouth of an exhausted or unconscious person not less than 120 mm. clear of the water with the body inclined backwards at an angle of not less than 20° and not more than 50° from the vertical position;

.2 turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 seconds;

3.5 An inherently buoyant lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.

3.6 It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

4. *Marking*

4.1 An inherently buoyant lifejacket shall be marked indelibly with:—

.1 the manufacturer's name or trade mark and name of lifejacket, if any;

.2 the words 'PERSON OF 32 KG. OR MORE' on both sides of the lifejacket in letters not less than 12 mm. in size in the case of lifejackets which can be worn inside out. In the case of lifejackets which can only be worn one way the marking shall be on the outside of the lifejacket;

.3 the words "DOT (UK) APPROVED" in letters not less than 12 mm. in size;

.4 the year of manufacture;

.5 the word 'FRONT' on both sides of the front part of the lifejacket in letters not less than 12 mm. in size in the case of lifejackets which can be worn inside out. In the case of lifejackets which can only be worn one way the marking shall be on the outside of the front part of the lifejacket.

5. Inherently buoyant lifejackets for persons weighing less than 32 kg. shall comply with the requirements of paras 1.1 to 6.1 except that in para 4.1.2 they shall be marked with the word "CHILD". Such lifejackets shall provide a minimum buoyancy of 66.7 newtons in fresh water. The buoyancy shall not be reduced by more than 5% after 24 hours submersion in fresh water.

6. *Instructions and Information*

6.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 shall be in a form suitable for inclusion in such a training manual. Instructions and information shall be in English in a clear and concise form and shall include the donning and securing of the lifejacket and the operation of the light where fitted.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 22

PART II

INFLATABLE LIFEJACKETS

Inflatable lifejackets for persons weighing 32 kg. or over shall comply with the following requirements:

1. *Construction*

1.1 An inflatable lifejacket shall be constructed with proper workmanship and materials.

1.2 An inflatable lifejacket shall be so constructed that:

.1 after demonstration, a person can correctly don it within a period of 1 minute without assistance;

.2 it is capable of being worn inside out or is clearly capable of being worn in only one way and, as far as is possible, cannot be donned incorrectly;

.3 it is comfortable to wear;

.4 it allows the wearer to jump from a height of at least 4.5 metres into the water without injury and without dislodging or damaging the lifejacket.

1.3 It shall be so constructed that the buoyancy is not reduced by more than 5% after 24 hours submersion in fresh water.

1.4 It shall be fitted with a whistle firmly secured by a cord of suitable length. The whistle shall be non-metallic and not be adversely affected by water or humidity.

1.5 It shall be fitted with an approved light if it is intended for a ship which is required to carry lifejackets fitted with lights.

1.6 It shall be fitted with retro-reflective material where it will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State.

1.7 An inflatable lifejacket shall be constructed with not less than two separate compartments, and not less than two compartments shall inflate automatically on immersion and be provided with a device to permit inflation by a single manual motion. All compartments shall be capable of being inflated by mouth. The automatic inflation system shall be so designed and protected that the risk of inadvertent inflation is reduced to a minimum.

1.8 In the event of loss of buoyancy in any one compartment the lifejacket shall be capable of complying with the requirements of paragraphs 1.2, 3.4 and 3.5.

1.9 The inflatable compartments shall be so located that when inflated they do not channel water into the wearer's face when in a seaway.

1.10 An inflatable lifejacket shall comply with the requirements of paragraph 1.3 after inflation by means of the automatic mechanism.

1.11 It shall be fitted with a ring or loop or similar device of adequate strength to facilitate rescue.

2. *Materials and Components*

2.1 Materials and components shall as applicable be rot-proof. corrosion resistant, and not be unduly affected by seawater, oil or fungal attack, shall be resistant to deterioration due to exposure to sunlight, and shall comply with the requirements of Clause 5 of BS 3595: 1981.

2.2 Materials used on the exterior of the buoyancy chambers shall be of a highly visible colour such as traffic yellow (BS 381, Ref 368), international orange (BS 381, Ref 592) or a colour of equivalent conspicuity.

3. *Performance*

3.1 An inflatable lifejacket shall not be damaged in stowage throughout an air temperature range of −30°C to +65°C.

3.2 It shall operate throughout a seawater temperature range of −1°C to +30°C.

3.3 It shall be capable of satisfactory operation in a sea-way.

3.4 It shall have sufficient buoyancy and stability in calm fresh water to:—

.1 lift the mouth of an exhausted or unconscious person not less than 120 mm. clear of the water with the body inclined backwards at an angle of not less than 20° and not more than 50° from the vertical position;

.2 turn the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 seconds;

3.5 An inflatable lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.

3.6 It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

4. *Marking*

4.1 An inflatable lifejacket shall be marked indelibly with:

.1 the manufacturer's name or trade mark and name of lifejacket, if any;

.2 means of identification of the date of manufacture;

.3 the words "PERSON OF 32 KG OR MORE" on the front in letters not less than 12 mm. in size;

.4 the words "DOT (UK) APPROVED" in letters not less than 12 mm in size; and

.5 the word "FRONT" on both sides of the front part of the lifejacket in letters not less than 12 mm. in size in the case of lifejackets which can be worn inside-out. In the case of lifejackets which can only be worn one way the marking shall be on the outside of the front part of the lifejacket.

5. *Instructions and Information*

Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and, if appropriate, in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 description of lifejacket and attachments;

.2 donning;

.3 operation;

.4 packing;

.5 any maintenance requirements;

.6 servicing requirements;

.7 type and charged weight of gas bottles; and

.8 replacement of gas bottles.

Regulations 2, 5, 7, 8, 10 and 11

PART III

LIFEJACKET LIGHTS

A lifejacket light shall comply with the following requirements:

1. *Construction*

1.1 The complete light unit shall be constructed with proper workmanship

and materials. The materials shall be compatible with materials used in the construction of a lifejacket and immersion suit designed to be worn without a lifejacket.

1.2 The unit shall be rot-proof, corrosion-resistant and not be unduly affected by seawater, oil or fungal attack.

1.3 The unit shall not have any adverse effect on the performance of the lifejacket or immersion suit to which it is attached.

1.4 Each component of the unit shall be designed to remain serviceable for at least as long as the storage life of the power source.

1.5 The unit shall be so designed that it will not leak any substance which would be harmful to the lifejacket, immersion suit or wearer.

1.6 A flashing light shall be provided with a manually operated switch.

1.7 A flashing light shall not be fitted with a lens or curved reflector to concentrate the beam.

1.8 Components of electronic circuits shall comply with the quality control requirements of BS 9000 or an equivalent standard. Where components cannot be obtained under one of the above standards these components shall be covered by a Certificate of Conformance from the manufacturer of the components.

2. *Attachment*

2.1 The method of attachment shall not require penetration of a lifejacket's buoyancy material or adversely affect the watertight integrity of an immersion suit.

2.2 The method of attachment shall be such that the light cannot become accidentally detached.

2.3 The light and power source shall be capable of being removed and replaced without causing damage to the lifejacket or immersion suit.

3. *Activation*

3.1 The light shall be easy to activate with wet, cold or gloved hands in adverse conditions and with the minimum of preparation.

4. *Performance*

4.1 A lifejacket light shall not be damaged in stowage throughout an air temperature range of −30°C to +65°C.

4.2 It shall operate as prescribed in paragraphs 4.7 and 4.8 throughout a seawater temperature range of −1°C to +30°C. It shall also be capable of operating in fresh water.

4.3 It shall be capable of operation in a sea-way when attached to a lifejacket or immersion suit.

4.4 It shall be visible over as great a segment of the upper hemisphere as is practicable when attached to a lifejacket or immersion suit.

4.5 A flashing light shall flash at a rate of not less than 50 flashes per minute and shall attain this rate within 5 minutes of activation.

4.6 A water activated light shall commence functioning within 2 minutes of immersion and have reached a luminous intensity of 0.75 candela within 5 minutes in salt water at temperatures of $-1°C$ and $+30°C$, and within 10 minutes in fresh water at ambient temperature.

4.7 A fixed light and a flashing light with a flash duration of not less than 0.15 seconds shall have a luminous intensity of not less than 0.75 candela. A flashing light with a flash duration of less than 0.15 seconds shall have an effective luminous intensity of not less than 0.75 candela.

4.8 A light shall have a source of energy capable of providing the luminous intensity, or the effective luminous intensity, as appropriate, for a period of at least 8 hours.

4.9 The unit and the lifejacket or immersion suit attachment arrangements shall be capable of withstanding a jump into the water from a height of 4.5 metres without the unit being damaged or dislodged or causing injury to the wearer of the lifejacket or immersion suit.

4.10 The unit shall be capable of withstanding a drop of 2 metres onto a rigidly mounted steel plate or concrete surface.

5. *Marking*

5.1 The unit shall be marked indelibly with:—

.1 the manufacturer's name or trade mark;

.2 the batch number or other means of identifying the unit;

.3 the words "DOT (UK) APPROVED"; and

.4 clear and concise directions in English for activating the light supported by illustrations.

5.2 The unit or power source as appropriate, shall be marked indelibly with the date of manufacture and expiry of the power source.

6. *Instructions and Information*

6.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and, if appropriate, in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such a training manual or instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 method or methods of attachment to lifejackets and immersion suits;

.2 type of power source for the particular type of light;

.3 if the power source is replaceable, method of replacement;

.4 type of light source and whether replaceable;

.5 any maintenance requirements including the method and recommended frequency of checks of power source; and

.6 operation of light.

SCHEDULE 11

Regulations 2, 5, 6, 7, 8, 10 and 25

REQUIREMENTS FOR IMMERSION SUITS AND THERMAL PROTECTIVE AIDS

PART I

IMMERSION SUITS

1. *Construction*

.1 An immersion suit shall be constructed with proper workmanship and of proper waterproof materials acceptable to the Secretary of State.

.2 A applicable the materials of the suit shall be rot-proof, corrosion resistant and not be unduly affected by seawater, oil or fungal attack.

.3 An immersion suit shall be of a highly visible colour on all parts where this will assist detection.

.4 It shall be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State.

.5 It shall be constructed to cover the whole body with the exception of the face. Hand covering shall be an integral part of the suit or shall be provided by means of permanently attached gloves.

.6 It shall be provided with arrangements to minimise or reduce free air in the legs of the suit.

.7 It shall be fitted with a non-metallic whistle not adversely affected by water and humidity and firmly secured by a cord of suitable length, means of attaching a light complying with the requirements of Part III of Schedule 10 and a ring or loop or similar device of adequate strength to facilitate rescue, if the suit has buoyancy and is designed to be worn without a lifejacket.

8. An immersion suit which also complies with the requirements of Parts I or II of Schedule 10 may be classified as a lifejacket.

.9 An immersion suit shall be provided with a valise or container for stowage purposes.

2. *Performance*

.1 An immersion suit shall not be damaged in stowage throughout an air temperature range of −30°C to +65°C.

.2 It shall operate throughout a seawater temperature range of −1°C to +30°C.

.3 It shall be resistant to deterioration where exposed to sunlight.

.4 An immersion suit shall be capable of satisfactory operation in a seaway.

.5 An immersion suit shall permit the person wearing it, and also wearing a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket to:

.1 climb up and down a vertical ladder at least 5 metres in length;

.2 perform normal duties during abandonment;

.3 jump from a height of not less than 4.5 metres into the water without damaging or dislodging the immersion suit, or being injured;

.4 swim a short distance through the water and board a survival craft.

.6 The suit shall be capable of being unpacked and donned without assistance within 2 minutes, taking into account any associated clothing, and a lifejacket if the immersion suit is to be worn in conjunction with a lifejacket.

.7 It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

.8 It shall be so constructed that following a jump from a height of not less than 4.5 metres into water there is no undue ingress of water into the suit.

.9 It shall be so constructed that when the wearer is exposed to disturbed water conditions for a period of 20 minutes there is no undue ingress of water into the suit.

.10 An immersion suit shall be so constructed that a person wearing it shall be able to don a lifejacket without assistance if the immersion suit is to be worn in conjunction with a lifejacket which shall be worn over the immersion suit.

.11 An immersion suit made of material which has no inherent insulation shall be so constructed that, when worn in conjunction with warm clothing and with a lifejacket, if the immersion suit is to be worn with a lifejacket, the immersion suit continues to provide sufficient thermal protection to ensure that when it is worn for a period of 1 hour in calm circulating water at a temperature of 5°C, the wearer's body core temperature does not fall more than 2°C, taking into account the water ingress following a jump into the water from a height of 4.5 metres and a 20 minute period of exposure to disturbed water conditions.

.12 An immersion suit made of material with inherent insulation, when worn either on its own or with a lifejacket, if the immersion suit is to be worn in conjunction with a lifejacket, shall provide the wearer with sufficient thermal insulation to ensure that the wearer's body core temperature does not fall more than 2°C after a period of 6 hours immersion in calm circulating water at a temperature of between 0°C and 2°C, taking into account the water ingress following a jump into the water from a height of 4.5 metres and a 20 minute period of exposure to disturbed water conditions.

.13 After being immersed in water at 5°C for a period of 1 hour the

wearer of the immersion suit shall be able to pick up a pencil and write with hands covered.

.14 A person in fresh water wearing either an immersion suit which complies with the requirements of Parts I or II of Schedule 10 or an immersion suit with a lifejacket shall:

.1 be able to turn from a face-down to a face-up position in not more than 5 seconds;

.2 float in a stable face-up position with the mouth not less than 120 mm clear of the water.

3. *Marking*

3.1 An immersion suit and the valise or container in which it is stowed shall be marked indelibly with:—

.1 the manufacturer's name or trade mark;

.2 means of identification of the date of manufacture;

.3 the size range for which it is designed;

.4 the words "DOT (UK) APPROVED";

.5 serial number; and

.6 instructions that it must be worn in conjunction with warm clothing if the suit is made of material which has no inherent insulation.

4. *Instructions and Information*

4.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 and, if appropriate, in the instructions for on-board maintenance specified in Part II of Schedule 12 shall be in a form suitable for inclusion in such a training manual or instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 description of the immersion suit and attachments;

.2 donning;

.3 operation of any auxiliary buoyancy;

.4 method of stowage in pack;

5. any servicing and maintenance requirements;

.6 cleaning; and

.7 use.

PART II Regulation 2, Schedule 1, Part I, Schedule 2, Parts I, II and III, Schedule 3, Schedule 4, Part IV

THERMAL PROTECTIVE AIDS

1. *Construction*

.1 A thermal protective aid shall be constructed with proper workmanship and materials.

.2 As applicable the materials of a thermal protective aid shall be rot-proof, corrosion resistant, and not be unduly affected by seawater, oil or fungal attack.

.3 A thermal protective aid shall be made of waterproof material having a thermal conductivity of not more than 0.25 Watts/metre °K and shall be so constructed that, when used to enclose a person, it shall reduce both the convective and evaporative heat loss from the wearer's body.

.4 It shall be so constructed as to cover the whole body of a person wearing a lifejacket with the exception of the face. Hands shall also be covered unless permanently attached gloves are provided.

.5 It shall be of a highly visible colour on all parts where this will assist detection.

.6 It shall be protected by waterproof packaging which can be opened with wet or cold hands.

2. *Performance*

.1 A thermal protective aid shall not be damaged in stowage throughout the air temperature range −30°C to +65°C.

.2 It shall function properly throughout the air temperature range −30°C to +20°C.

.3 It shall function throughout the seawater temperature range −1°C to +30°C if designed to be worn in a seaway.

.4 It shall be capable of being unpacked and easily donned without assistance in a survival craft or rescue boat.

.5 It shall permit the wearer to remove it in the water in not more than 2 minutes, if it impairs ability to swim.

3. *Marking*

The thermal protective aid packaging shall be marked with:—

.1 the manufacturer's name or trade mark;

.2 instructions for use;

.3 the words "DOT (UK) APPROVED".

4. *Instructions and Information*

4.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 12 shall be in a form suitable for inclusion in such a training manual. Instructions and information shall be in English in a clear and concise form and shall include the following:—

.1 stowage in lifeboats and liferafts;

.2 unpacking;

.3 donning in a survival craft;

.4 removal in the water (if applicable);

.5 purpose, and when it should be used;

.6 whether or not ability to swim is impaired when wearing the aid; and

.7 inspection recommendations.

SCHEDULE 12 Regulations 2, 5, 6, 7, 8, 9, 10 and 11

REQUIREMENTS FOR TRAINING MANUALS AND INSTRUCTIONS FOR ON-BOARD MAINTENANCE

PART I

TRAINING MANUALS

1. A training manual shall contain instructions and information on the life-saving appliances provided in the ship. It shall also contain information on the best methods of survival. The material in the manual shall be in easily understood terms and illustrated where appropriate.

2. A training manual may comprise one or more volumes and any part of the instructions and information may be provided in the form of audio-visual aids as an alternative to printed material.

3. As appropriate, the following shall be explained in detail:

.1 donning of lifejackets and immersion suits,;

.2 muster at the assigned stations;

.3 boarding, launching, and clearing the survival craft, rescue and inflated boats;

.4 method of launching from within the survival craft;

.5 release from launching appliances;

.6 methods and use of devices for protection in launching areas;

.7 illumination in launching areas;

.8 use of all survival equipment;

.9 use of all detection equipment;

.10 with the assistance of illustrations, the use of radio life-saving appliances;

.11 use of sea anchors;

.12 use of engine and accessories;

.13 recovery of survival craft, rescue and inflated boats including stowage and securing;

.14 hazards of exposure and the need for warm clothing;

.15 best use of the survival craft facilities in order to survive;

.16 methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore life-saving apparatus and ship's line-throwing apparatus;

.17 all other functions contained in the muster list and emergency instructions; and

.18 instructions for emergency repair of the life-saving appliances.

Regulations 2, 5, 6, 7, 8, 9, 10, 11 and 13

PART II

INSTRUCTIONS FOR ON-BOARD MAINTENANCE

1. Instructions for on-board maintenance of life-saving appliances shall be in easily understood terms and illustrated wherever possible.

2. As appropriate the instructions shall include the following for each appliance:

.1 a checklist for use when carrying out the inspections required by regulation 13(6);

.2 maintenance and repair instructions;

.3 schedule of periodic maintenance;

.4 diagram of lubrication points with the recommended lubricants;

.5 list of replaceable parts;

.6 list of sources of spare parts; and

.7 log for records of inspections and maintenance.

Regulations 2, 5, 6, 7, 8 and 10

SCHEDULE 13

REQUIREMENTS FOR GENERAL EMERGENCY ALARM SYSTEMS

1. The general emergency alarm system shall be capable of sounding the general emergency alarm signal consisting of seven or more short blasts followed by one long blast on the ship's whistle or siren and additionally, in the case of ships of Classes I, II and II(A), and of Classes VII, VII(T), VIII, VIII(T) and IX of 45.7 metres in length and upwards on an electrically operated bell or klaxon or other equivalent warning system, which shall be powered from the ship's main supply and the emergency source of electrical power required by regulation 46(1) of the Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 or regulation 45(1) of The Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984 as appropriate and as applicable.

2. The system shall be capable of operation from the navigating bridge and, except for the ship's whistle, also from other strategic points. The system shall be audible throughout all the accommodation and normal crew working spaces.

EXPLANATORY NOTE

(This Note is not part of the Regulations.)

These Regulations give effect, in relation to new United Kingdom ships, of Classes I, II, II(A) and Classes VII to IX(A)(T) inclusive, XI and XII and other new ships of such Classes of Convention size and type, to the relevant provisions in Chapter III in the 1983 Amendments to the International Convention for the Safety of Life at Sea, 1974.

The principal changes from the Merchant Shipping (Life-Saving Appliances) Regulations 1980 as amended are:—

(1) provision of totally enclosed self-righting motor lifeboats for cargo ships and totally or partially enclosed motor lifeboats for passenger ships;

(2) improved falls release arrangements in lifeboats, and a launching capability when the ship is proceeding at 5 knots on cargo ships of 20,000 tons and upwards;

(3) provision of rescue boats (which may also be lifeboats);

(4) provision of additional radio equipment to improve communications and location of survival craft;

(5) provision of immersion suits and thermal protective aids;

(6) provision of lifejackets lights;

(7) provision of training manuals and instructions for on-board maintenance of life-saving appliances; and

(8) provision of a Life-saving Signals and Rescue Methods table.

The British Standards referred to in the Regulations can be obtained from any of the sales outlets operated by the British Standards Institution, or by post from the British Standards Institution at Linford Wood, Milton Keynes, MK14 6LE (Telephone number: Milton Keynes (STD 0908) 320066).

Merchant Shipping Notices are obtainable from the Department of Transport Marine Library, Sunley House, High Holborn, London WC1V 6LP and from any Department of Transport, Marine Office.

International Maritime Organization documents referred to in the Regulations can be obtained from the International Maritime Organisation, 4 Albert Embankment, London SE1 7SR.

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SI 1986/1066
ISBN 0-11-067066-3