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CODES OF PRACTICE
AND PERFORMANCE STANDARDS
for
REGULATIONS PRESCRIBED

Pursuant to the Shipping and Seamen Act 1952

Government Notice

Shipping and Seamen Act 1952

The Lifesaving Appliances (Code of Practice for Existing Ships of Classes I and II) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Existing Ships of Classes I and II) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Existing Ships of Classes I and II

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Approved” means approved in writing by the Director.

“Buoyant apparatus” means flotation equipment (other than lifebuoys and lifejackets) designed to support persons who are in the water.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Child” For the purposes of these Regulations a “child” means a passenger weighing less than 32 kg and the term “childrens lifejacket” shall mean a lifejacket approved for use by a person weighing less than 32 kg.

“Existing ship” means a ship which is not a new ship.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“Launching appliance or arrangement” means an appliance or arrangement for transferring a survival craft, or boat from its stowed position safely to the water.

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Class I, on the 1st day of July 1986; and

(b) in the case of a ship of Class II, on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Passenger ship” means a ship carrying more than 12

passengers; or, in the case of a ship plying within restricted limits, means a ship carrying any passengers.

“Person” means a person over the age of 1 year.

“Surface effect ship” means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

“Thermal protective aid” means a bag or suit made of waterproof material with low thermal conductivity.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to Existing Ships of Classes I and II except ships of Class II which are hydrofoil ships or surface effect ships.

3. Lifeboats, liferafts and buoyant apparatus—Every ship of Class I or Class II to which this Code of Practice applies shall carry either:

(a) On each side of the ship lifeboats of sufficient aggregate capacity to accommodate 1/2 of the total number of persons which the ship is certified to carry; or

(b) in the case of a ship of Class I: lifeboats and liferafts which together provide sufficient aggregate capacity to accommodate the total number of persons which the ship is certified to carry; provided there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37.5 per cent of the total number of persons which the ship is certified to carry; or

(c) in the case of a ship of Class II which is sub-divided in accordance with the requirements of the Shipping (Construction) Regulations 1989, such lifeboats and liferafts as are together sufficient for the total number of persons which the ship is certified to carry; but in any such case the number of lifeboats carried in ships of 75m in length or over shall never be less than 4; 2 of which shall be carried on each side of the ship, and in ships of less than 75m in length shall never be less than 2; 1 of which shall be carried on each side of the ship.

(2) On every ship of Class I or Class II to which this Code of Practice applies 2 of the lifeboats required by sub-clause (1) of this clause shall be kept ready, 1 on each side of the ship, for immediate use in an emergency while the ship is at sea. These emergency lifeboats shall be not more than 8.5m in length, and each of them shall be a motor lifeboat and may be counted for the purposes of sub-clauses (3) or (5) of this clause.

(3) In every ship of Class I to which this Code of Practice applies which is certified to carry more than 30 persons at least 1 of the lifeboats carried on each side of the ship shall be a motor lifeboat; and in every ship of Class I which is certified to carry 30 persons or less at least 1 of the lifeboats carried shall be a motor lifeboat.

(4) In every ship of Class I to which this Code of Practice applies which is certified to carry 1,500 persons or more, each of the motor lifeboats carried in compliance with sub-clause (3) of this clause shall be provided with radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989. In every such ship which is certified to carry more than 199 but less than 1,500 persons, at least 1 of the motor lifeboats carried in compliance with sub-clause (3) of this clause shall be so provided.

(5) In every ship of Class II to which this Code of Practice applies which is certified to carry more than 50 but less than 250 persons at least 1 of the lifeboats carried shall be a motor lifeboat, and in every such ship which is certified to carry 250 persons or more at least 1 of the lifeboats carried on each side of the ship shall be a motor lifeboat.

(6) Every motor lifeboat carried on a ship of Class I or Class II in compliance with this clause shall be provided with approved searchlight equipment.

(7) Every lifeboat carried on a ship of Class I or Class II in compliance with this clause shall be not less than 7.3m in length.

(8) In every ship of Class I or Class II to which this Code of Practice applies each lifeboat shall be attached to a separate set of davits of the gravity type, except that luffing type davits may be fitted for operating lifeboats weighing not more than 2300kg in their turning out condition.

(9) Every ship of Class I to which this Code of Practice applies which does not carry on each side of the ship a motor lifeboat provided with the radio equipment specified in sub-clause (4) of this clause shall carry portable radio equipment which complies with the requirements of the Shipping (Radio) Regulations 1989.

(10) Every ship of Class II to which this Code of Practice applies engaged on voyages exceeding 12 hours duration shall carry portable radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989.

(11) The liferafts carried on a ship of Class I in compliance with sub-clause (1) (b) of this clause shall be served by approved launching appliances. There shall never be less than 1 such appliance on each side of the ship, and the difference in the number of appliances fitted on each side shall not exceed 1.

(12) Where, in any ship of Class II lifeboats and liferafts are together carried in compliance with sub-clause (1) (c) of this clause and the aggregate capacity of the lifeboats is less than 50 per cent of the number of persons which the ship is certified to carry, a sufficient number of the liferafts shall be of a type suitable for launching by launching appliances, so that the aggregate capacity of the lifeboats and liferafts able to be launched by launching appliances is together sufficient for at least 50 per cent of the number of persons which the ship is certified to carry. At least 1 approved launching appliance shall be provided on each side of the ship for launching those liferafts. Liferafts suitable for launching by launching appliances shall be stowed near to those appliances, and shall be clearly marked to distinguish them from liferafts which are not suitable for launching by launching appliances.

(13) Every ship of Class I to which this Code of Practice applies shall carry in addition to any liferafts carried in compliance with subclause (1) (b) of this clause liferafts of sufficient capacity to accommodate 25 per cent of the total number of persons the ship is certified to carry together with buoyant apparatus sufficient for 3 per cent of that number. Such liferafts shall be of a type capable of being launched by the appliances fitted in compliance with sub-clause (11) of this clause but they need not be served by such appliances.

Provided that:

Ships which have a factor of subdivision of 0.33 or less may carry instead of liferafts for 25 per cent of the total number of persons which the ship is certified to carry and buoyant apparatus for 3 per cent of that number, buoyant apparatus for 25 per cent of that number.

(14) Every ship of Class II to which this Code of Practice applies shall carry, in addition to any liferafts carried in compliance with sub-clause (1) (c) of this clause inflatable liferafts sufficient to support at least 10 per cent of the total number of persons which the ship is certified to carry. Such liferafts need not be of a type capable of being launched by launching appliances.

4. Lifebuoys—Every ship of Class I and Class II to which this Code of Practice applies shall carry:

(a) at least the number of lifebuoys determined in accordance with the following table.

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 60	8
60 or more but less than 120	12
120 or more but less than 180	18
180 or more but less than 240	24
240 or more	30

(b) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 per cent of the total number of lifebuoys carried, and on every ship of less than 60 metres length not less than 6 lifebuoys, shall be provided with self igniting lights, and not less than 2 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.

5. Lifejackets—Every ship of Class I and Class II to which this Code of Practice applies shall carry:

(a) A lifejacket for every person which the ship is certified to carry, and sufficient additional lifejackets for at least 5 per cent of the total number of persons which the ship is certified to carry.

(b) Unless the lifejackets carried in compliance with paragraph (a) of this clause can be adapted for use by children, additional childrens lifejackets for at least 15 per cent of the number of passengers which the ship is certified to carry.

(c) Every lifejacket carried in compliance with this clause and intended for use by a member of the crew shall be marked indelibly on the inside and the outside, both back and front, in letters not less than 75mm high and in a colour contrasting with the colour of the lifejacket, with the word "CREW".

(d) Lifejackets carried in compliance with the provisions of this clause shall be stowed in accordance with the requirements of of clause 6 of this Code of Practice.

6. Stowage of Lifejackets—(a) Lifejackets shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations. In ships of Classes I and II, to which this Code of Practice applies, not less than 5 per cent of the number of lifejackets carried for passengers shall be stowed in lockers on or adjacent to open decks or muster stations. The stowage position of all lifejackets shall be clearly and permanently indicated.

(b) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of clause 5 of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

7. Line-throwing appliance—Every ship of Class I or Class II to which this Code of Practice applies shall carry a line-throwing appliance.

8. Distress flares— Every ship of Class I or Class II to which this Code of Practice applies shall carry at least 12 rocket parachute flares.

9. Immersion suits and thermal protective aids—Every ship of Class I to which this Code of Practice applies shall carry for each lifeboat on the ship at least 3 immersion suits and, in addition, a thermal protective aid for every person to be accommodated in the lifeboat and not provided with an immersion suit. These immersion suits and thermal protective aids need not be carried for persons to be accommodated in totally or partially enclosed lifeboats.

10. Emergency Position-Indicating Radio Beacons—Every ship of Class I or Class II to which this Code of Practice applies shall carry on each side of the ship at least 1 survival

craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Lifesaving Appliances (Code of Practice for New Ships of Classes I and II) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for New Ships of Classes I and II) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for New Ships of Classes I and II

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Approved” means approved in writing by the Director.

“Buoyant apparatus” means flotation equipment (other than lifebuoys and lifejackets) designed to support persons who are in the water.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Child” For the purposes of these Regulations a “child” means a passenger weighing less than 32 kg and the term “childrens lifejacket” shall mean a lifejacket approved for use by a person weighing less than 32 kg.

“Existing ship” means a ship which is not a new ship.

“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.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“Launching appliance or arrangement” means an appliance or arrangement for transferring a survival craft, or boat from its stowed position safely to the water.

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Class I, on the 1st day of July 1986; and

(b) in the case of a ship of Class II, on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Passenger ship” means a ship carrying more than 12 passengers; or, in the case of a ship plying within restricted limits, means a ship carrying any passengers.

“Person” means a person over the age of 1 year.

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

“Surface effect ship” means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to New Ships of Classes I and II except ships of Class II which are hydrofoil ships or surface effect ships.

3. Lifeboats, rescue boats and liferafts— (1) Every ship of Class I or Class II to which this Code of Practice applies shall carry either:

(a) On each side of the ship lifeboats of sufficient aggregate capacity to accommodate 1/2 of the total number of persons which the ship is certified to carry; or

(b) Lifeboats and liferafts which together provide sufficient aggregate capacity to accommodate the total number of persons which the ship is certified to carry provided there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37.5 per cent of the total number of persons which the ship is certified to carry; or

(c) In the case of a ship of Class II which is subdivided in accordance with the requirements of the Shipping (Construction) Regulations 1989 lifeboats of sufficient aggregate capacity for at least 30 per cent of the total number of persons the ship is certified to carry and liferafts of sufficient aggregate capacity that together with the lifeboats will accommodate the total number of persons the ship is certified to carry. The lifeboats shall be distributed equally on each side of the ship so far as practicable and the liferafts shall be served by approved launching appliances equally distributed on each side of the ship.

(2) The lifeboats carried pursuant to sub-clause (1) of this clause shall comply with the performance standards for “partially enclosed lifeboats”, or “self righting partially enclosed lifeboats”, or “totally enclosed lifeboats”.

(3) The liferafts carried in compliance with sub-clause (1) (b) of this clause shall be served by approved launching appliances. There shall never be less than 1 such appliance on each side of the ship, and the difference in the number of appliances fitted on each side shall not exceed 1.

(4) Every such ship shall carry in addition to any liferafts carried in compliance with sub-clause (1) (b) or (1) (c) of this clause, liferafts of sufficient capacity to accommodate 25 per cent of the total number of persons the ship is certified to carry. Such liferafts shall be of a type capable of being launched by the appliances fitted in compliance with sub-clause (3) of this clause and they shall be served by at least 1 launching appliance each side of the ship which may be those provided in compliance with the requirements of subclause (3) of this clause.

(5) Every such ship of less than 500 gross tonnage which is certified to carry less than 200 persons, may comply with the following requirements in lieu of complying with the requirements of sub-clause (1) (a), (b) or (c) and sub-clause (4) of this clause:

(a) It shall 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;

(b) Unless the liferafts required by sub-clause (5) (a) can 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 per cent of the total number of persons the ship is certified to carry. Such liferafts shall be served by at least 1 approved launching appliance on each side of the ship.

(c) If the rescue boat required by sub-clause (7) of this clause is also a lifeboat it may be included in the aggregate capacity required by sub-clause (5) (a) of this clause provided that the total capacity available on either side of the ship is at least 150 per cent of the total number of persons the ship is certified to carry.

(d) In the event of any 1 survival craft being lost or rendered unseaworthy there shall be sufficient survival craft available for use on each side to accommodate the total number of persons the ship is certified to carry.

(6) Every such ship of 500 gross tonnage and over shall carry at least 1 rescue boat on each side of the ship.

(7) Every such ship of less than 500 gross tonnage shall carry at least 1 rescue boat.

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

(9) The number of lifeboats and rescue boats that are carried on any ship to which this Code of Practice applies shall be sufficient to ensure that in providing for abandonment by the total number of persons the ship is certified to carry not more than 6 liferafts need be marshalled by each lifeboat or rescue boat. Provided that in the case of a ship of Class II not more than 9 liferafts need be marshalled by each lifeboat or rescue boat.

(10) All survival craft required to provide for abandonment by the total number of persons the ship is certified to carry 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.

4. Lifebuoys—Every ship of Class I or Class II to which this Code of Practice applies shall carry:

(a) at least the number of lifebuoys determined in accordance with the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 60	8
60 or more but less than 120	12
120 or more but less than 180	18
180 or more but less than 240	24
240 or more	30

(b) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 per cent of the total number of lifebuoys carried, and on every ship of less than 60 metres length not less than 6 lifebuoys, shall be provided with self igniting lights, and not less than 2 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.

5. Lifejackets—Every ship of Class I and Class II to which this Code of Practice applies shall carry:

(1) (a) A lifejacket for every person which the ship is certified to carry; and

(b) sufficient additional lifejackets for at least 5 per cent of the total number of persons which the ship is certified to carry; and

(c) a number of lifejackets suitable for children shall be provided equal to at least 10 per cent of the number of passengers the ship is certified to carry or such greater number as may be required to provide a lifejacket for each child; and

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

(2) Every lifejacket carried in compliance with sub-clause (1) of this clause and intended for use by a member of the crew shall be marked indelibly on the inside and the outside, both back and front, in letters not less than 75mm high and in a colour contrasting with the colour of the lifejacket, with the word "CREW".

(3) Lifejackets carried in compliance with the provisions of this clause shall be stowed in accordance with the requirements of clause 5 of this Code of Practice.

6. Stowage of Lifejackets—(a) Lifejackets shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations. In ships of Classes I and II to which this Code of Practice applies, not less than 5 per cent of the number of lifejackets carried for passengers shall be stowed in lockers on or adjacent to open decks or muster stations. The stowage position of all lifejackets shall be clearly and permanently indicated.

(b) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of clause 5 of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

7. Inflatable lifejackets for special duties crew members—Included in the lifejackets required to be provided in compliance with clause 5 of this Code of Practice there shall be at least sufficient inflatable lifejackets 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 those duties.

8. Lifejacket lights—Every lifejacket carried on a ship to which this Code of Practice applies shall be fitted with a lifejacket light.

9. Line-throwing appliance—Every ship of Class I or Class II to which this Code of Practice applies shall carry a line-throwing appliance.

10. Distress flares—Every ship of Class I or Class II to which this Code of Practice applies shall carry at least 12 rocket parachute flares.

11. Immersion suits and thermal protective aids—(a) Every ship of Class I to which this Code of Practice applies shall carry an immersion suit of appropriate size for every person assigned to crew a rescue boat.

(b) Every ship of Class I to which this Code of Practice applies shall carry for each lifeboat on the ship at least 3 immersion suits and, in addition, a thermal protective aid for every person to be accommodated in the lifeboat and not provided with an immersion suit. These immersion suits and thermal protective aids need not be carried for persons to be accommodated in totally or partially enclosed lifeboats.

12. Survival craft embarkation arrangements—On every ship of Class I or Class II to which this Code of Practice applies, survival craft embarkation arrangements shall be designed for:

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

(b) davit-launched liferafts to 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.

(c) rescue boats to 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-clause (a) of this clause 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.

13. Float-free arrangements for liferafts—On every ship of Class I or Class II to which this Code of Practice applies every liferaft shall be stowed with its painter permanently attached to the ship and with a float-free launching arrangement so that, as far as practicable the liferaft floats free and, if inflatable, inflates automatically when the ship sinks.

14. Survival craft radio equipment—(1) Every ship of Class I to which this Code of Practice applies shall be provided with survival craft radio equipment determined in accordance with the following table:

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

(2) Every ship of Class II to which this Code of Practice applies which is engaged on voyages exceeding 12 hours duration shall be provided with portable radio equipment.

15. Two-way radiotelephone sets—Every ship of Class I or Class II to which this Code of Practice applies shall be provided with at least 3 two-way radiotelephone sets.

16. Emergency Position-Indicating Radio Beacons—Every ship of Class I or Class II to which this Code of Practice applies shall carry on each side of the ship at least 1 survival craft emergency position-indicating radio beacon so stowed that it can be readily placed in any survival craft.

17. Training and instructions in operation of lifesaving appliances—Every ship of Class I or Class II to which this Code of Practice applies 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 United Kingdom Department of Transport.

18. Emergency means for two-way communication—Every ship of Class I or Class II to which this Code of Practice applies shall be provided with 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.

19. General emergency alarm and public address system—Every ship of Class I or Class II to which this Code of Practice applies shall be provided with a general emergency alarm system and in addition either a public address system or other suitable means of communication; and

20. Emergency lighting—(1) In every ship of Class I or II to which this Code of Practice applies, an electric lighting system shall be provided throughout the ship and in particular upon the decks from which lifeboats and liferafts are embarked. Provision shall also be made in every such ship for electric lighting for:

(a) illumination of the launching gear and of the lifeboats, and of the liferaft launching appliances where provided and the liferafts which they serve, during the preparation for and process of launching; and

(b) for illuminating the water into which the lifeboats and those liferafts served by launching appliances are launched until the process of launching is completed; and

(c) for illuminating the stowage position of liferafts for which launching appliances are not provided. The lighting shall be operated from the ship's main generating plant and shall be so arranged that power may be supplied from the emergency source of power.

(2) In every ship of Class I or II to which this Code of Practice applies, the exit from every main compartment occupied by passengers or crew shall be continuously lighted by an emergency electric lamp, operated from the ship's main generating plant and so arranged that power may be supplied from the emergency source of power.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Lifesaving Appliances (Code of Practice for Class III Ships) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Class III Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Class III Ships

1. Interpretation—In this Schedule, unless the context otherwise requires:

"The Act" means the Shipping and Seamen Act 1952.

"Certified" means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

"Child" means a passenger weighing less than 32 kg and the term "childrens lifejacket" shall mean a lifejacket approved for use by a person weighing less than 32 kg.

"Class III ship" means a passenger ship engaged on daylight excursions in the coastal trade.

"Hydrofoil ship" means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

"Motor lifeboat" means a lifeboat propelled by an internal combustion or compression ignition engine.

"Surface effect ship" means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to Class III Ships except such ships which are hydrofoil ships or surface effect ships.

3. Lifeboats and liferafts—(1) Every ship of Class III shall carry either:

(a) On each side of the ship lifeboats of sufficient aggregate capacity to accommodate 1/2 of the number of persons which the ship is certified to carry; or

(b) Such lifeboats and liferafts as are together sufficient for the total number of persons which the ship is certified to carry;

but in any case the number of lifeboats carried in ships of 75m in length or over shall never be less than 4; 2 of which shall be carried on each side of the ship, and in ships of less than 75m in length shall never be less than 2; 1 of which shall be carried on each side of the ship.

(2) On every ship of Class III, 2 of the lifeboats required by sub-clause (1) of this clause shall be kept ready, 1 on each side of the ship, for immediate use in an emergency while the ship is at sea. These emergency lifeboats shall be not more than 8.5m in length, and each of them may be a motor lifeboat and may be counted for the purposes of sub-clause (3) of this regulation.

(3) In every ship of Class III which is certified to carry more than 250 persons but less than 500 persons at least 1 of the lifeboats carried shall be a motor lifeboat, and in every such ship which is certified to carry 500 persons or more at least 1 of the lifeboats carried on each side of the ship shall be a motor lifeboat.

(4) Every lifeboat carried on a ship of Class III in compliance with this clause shall be not less than 6.1m in length.

(5) In every ship of Class III each lifeboat shall be attached to a separate set of davits of the gravity type, except that luffing type davits may be fitted for operating lifeboats weighing not more than 2300g, in their turning out condition.

4. Lifebuoys—(1) Every ship of Class III shall carry at least 8 lifebuoys.

(2) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline and at least 1 lifebuoy on each side shall be fitted with a self-activated smoke signal. 2 of the lifebuoys provided with smoke signals shall also be provided with self igniting lights and be capable of quick release from the navigating bridge.

5. Lifejackets—(1) Every ship of Class III shall carry:

(a) A lifejacket for every person which the ship is certified to carry; and

(b) Unless the lifejackets carried in compliance with paragraph (a) of this sub-clause can be adapted for use by children, additional childrens lifejackets for at least 15 per cent of the number of passengers which the ship is certified to carry.

(2) Every lifejacket carried in compliance with this clause and intended for use by a member of the crew shall be marked indelibly on the inside and the outside, both back and front, in letters not less than 75mm high and in a colour contrasting with the colour of the lifejacket, with the word "CREW".

(3) Lifejackets carried in compliance with the provisions of this clause shall be stowed in accordance with the requirements of clause 6 of this Code of Practice.

6. Stowage of Lifejackets—(1) On every ship of Class III lifejackets shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations.

(2) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

7. Line-throwing appliance—Every ship of Class III of 30 metres in length or over shall carry a line-throwing appliance.

8. Distress flares—Every ship of Class III shall carry at least 6 rocket parachute flares.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.
c1

The Lifesaving Appliances (Code of Practice for Class IV Ships) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Class IV Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Class IV Ships

1. Interpretation—In this Schedule, unless the context otherwise requires:

"The Act" means the Shipping and Seamen Act 1952.

"Approved" means approved in writing by the Director.

"Certified" means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

"Class IV Ship" means a passenger ship plying within extended river limits.

"Director" means the person who is for the time being the Director of the Maritime Transport Division of the Ministry of Transport and includes his deputy.

"Dinghy" means a boat complying with the provisions of the Shipping (Dinghies) Notice 1989.

"Hydrofoil ship" means a ship which is supported above the water in normal operating conditions by hydrodynamic forces generated on foils.

"Surface effect ship" means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to Class IV Ships except such ships which are hydrofoil ships or surface effect ships.

3. Lifeboats, rescue boats, inflated boats and dinghies—(1) Every ship of Class IV shall carry at least the number of lifeboats, rescue boats, inflated boats or dinghies in accordance with the following table:

<i>Length of Ship in Metres</i>	<i>Number of Boats</i>
75 or more	4 lifeboats or rescue boats
65 or more but less than 75	3 lifeboats or rescue boats
45 or more but less than 65	2 lifeboats or rescue boats
24 or more but less than 45	1 lifeboat, rescue boat, inflated boats or dinghy
Less than 24	Nil

(2) Where only 1 lifeboat, rescue boat, inflated boat or dinghy is carried, it shall be capable of being launched from one side or end of the ship.

(3) A ship of Class IV shall not be required to carry a greater number of boats than the number required to accommodate all persons which the ship is certified to carry.

(4) In every ship of Class IV each lifeboat, rescue boat, inflated boat or dinghy shall be attached to a separate set of davits or shall have other alternative means of launching approved by a surveyor.

4. Lifebuoys—(1) Every ship of Class IV shall carry at least the number of lifebuoys specified in the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 9	1
9 or more but less than 15	2
15 or more but less than 24	3
24 or more but less than 35	4
35 or more but less than 60	6
60 or more	8

(2) Where only 1 lifebuoy is carried it shall be provided with a buoyant lifeline and a self-igniting light and where 2 or more lifebuoys are carried at least 1 lifebuoy shall be provided with a buoyant lifeline and at least 1 lifebuoy with a self-igniting light. Provided that on any ship of Class IV certified for operation in day light only, self-igniting lights shall not be required to be provided.

5. Total buoyancy requirements—Every ship of Class IV shall carry such liferafts, buoyant apparatus, lifebuoys, or lifejackets as will be sufficient together with the lifeboats (if any) and lifebuoys carried in compliance with clause 3 and 4 of this Code of Practice for 120 per cent of the total number of persons the ship is certified to carry.

6. Stowage of liferafts and buoyant apparatus—On every ship of Class IV, liferafts and buoyant apparatus shall be so stowed that they can be readily placed in the water on either side of the ship.

7. Stowage of lifejackets—(1) On every ship of Class IV all lifejackets carried in accordance with the requirements of clause 5 of this Code of Practice shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations.

(2) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

8. Distress flares—Every ship of Class IV shall carry at least 2 buoyant smoke signals.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

d1

The Lifesaving Appliances (Code of Practice for Class V Ships) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Class V Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Class V Ships

1. Interpretation—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule

“Class V ship” means a passenger ship plying within river limits.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Surface effect ship” means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to Class V Ships except such ships which are hydrofoil ships or surface effect ships.

3. Lifeboats, rescue boats, inflated boats and dinghies—(1) Every ship of Class V of 35 metres or more in length shall carry at least 1 lifeboat, rescue boat, inflated boat or dinghy capable of being launched on 1 side of the ship or over the stern.

(2) Every lifeboat, rescue boat, inflated boat or dinghy carried in a ship of Class V shall be attached to a separate set of davits, or have other alternative means of launching accepted by a Surveyor.

4. Lifebuoys—(1) Every ship of Class V shall carry at least the number of lifebuoys specified in the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 9	1
9 or more but less than 15	2
15 or more but less than 24	3
24 or more but less than 35	4
35 or more but less than 60	6
60 or more	8

(2) Where only 1 lifebuoy is carried it shall be provided with a buoyant lifeline and a self-igniting light and where 2 or more lifebuoys are carried at least 1 lifebuoy shall be provided with a buoyant lifeline and at least 1 lifebuoy provided with a self-igniting light. Provided that if the ship is certified for operation in day light hours only, self igniting lights shall not be required.

5. Total buoyancy requirements—Every ship of Class V shall carry such liferafts, buoyant apparatus, lifebuoys or lifejackets as will be sufficient, together with the boats' (if any) and lifebuoys carried in compliance with clause 3 and 4 of this Code of Practice for 100 per cent of the total number of persons the ship is certified to carry.

6. Stowage of liferafts and buoyant apparatus—On every ship of Class V liferafts and buoyant apparatus shall be so stowed that they can be readily placed in the water on either side of the ship.

7. Stowage of lifejackets—(1) On every ship of Class V lifejackets shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations.

(2) Where due to the particular arrangements of a ship, the

lifejackets provided in compliance with the requirements of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

e1

The Lifesaving Appliances (Code of Practice for Class VI Ships) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Class VI Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Class VI Ships

1. Interpretation—In this Schedule unless the context otherwise requires

“The Act” means the Shipping and Seamen Act 1952.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Class VI ship” means a passenger ship plying within extreme limits.

“Dinghy” means a boat complying with the Shipping (Dinghies) Notice 1989.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Rescue Boat” means a boat designed to rescue persons in distress and to marshal survival craft.

“Surface effect ship” means a ship the weight of which, in the normal operating condition, is partially supported by a cushion of air expelled from the ship, and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Act have the meaning so defined.

2. Application—This Schedule applies to Class VI Ships except such ships which are hydrofoil ships or surface effect ships.

3. Ships of 45 metres or over—Every ship of Class VI of 45 metres in length or over shall comply with the provisions of the Lifesaving Appliances (Code of Practice for Class III Ships) Notice 1989 as they apply to ships of Class III.

4. Ships of 24 metres to 45 metres—(1) Every ship of Class VI of 24m in length or more but less than 45m in length shall carry at least 1 lifeboat or rescue boat capable of being launched on 1 side of the ship.

(2) Every ship of Class VI of 24m in length or over but less than 45m shall carry, in addition to the boats carried in compliance with subclause (1) of this clause and lifebuoys required in compliance with clause 6 of this Code of Practice, such additional lifeboats, rescue boats, dinghies or liferafts as will, together with the boats carried in compliance with

subclause (1) of this clause, be sufficient for the total number of persons the ship is certified to carry.

(3) Every lifeboat or rescue boat carried in a ship of Class VI shall be attached to a separate set of davits, or have other alternative means of launching accepted by a Surveyor.

(4) Liferafts shall be so stowed that they can readily be placed in the water on either side of the ship.

5. Ships of less than 24 metres—Every ship of Class VI of less than 24m in length shall carry, in addition to the lifebuoys required in compliance with clause (6) of this Code of Practice such liferafts or dinghies as will be sufficient to accommodate the total number of persons the ship is certified to carry.

6. Lifebuoys—(1) Every ship of Class VI shall carry at least the number of lifebuoys specified in the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 15	2
15 or more but less than 24	3
24 or more but less than 35	4
35 or more but less than 45	6

(2) At least 1 lifebuoy shall be provided with a buoyant lifeline and at least 50 per cent of the lifebuoys shall be provided with self igniting lights.

7. Lifejackets—Every ship of Class VI shall carry a lifejacket for every person the ship is certified to carry.

8. Stowage of lifejackets—(1) On every ship of Class VI lifejackets shall be stowed in locations approved by a Surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations.

(2) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of this Code of Practice may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

9. Distress flares—Every ship of Class VI shall carry at least 2 rocket parachute flares and 2 buoyant smoke signals.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

f1

The Lifesaving Appliances (Code of Practice for New Ships of Classes VII, VIIA & VIII) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for New Ships of Classes VII, VIIA & VIII) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for New Ships of Classes VII, VIIA and VIII

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“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.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“New Ship” means a ship the keel of which is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Class VII or Class VIIA: the 1st day of July 1986; or

(b) in the case of a ship of Class VIII: the date of commencement of this Notice

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Thermal protective aid” means a bag or suit made of waterproof material with low thermal conductivity.

Other expressions defined in the Act have the meaning so defined.

2. Lifeboats, rescue boats, inflated boats and liferafts—(1) Every ship of Classes VII, VIIA or VIII to which this Code of Practice applies shall carry:

(a) on each side of the ship 1 or more totally enclosed lifeboats of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry; and

(b) a liferaft or liferafts, capable of being launched on either side of the ship and of such aggregate capacity as will accommodate the total number of persons the ship is certified to carry. 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 the ship is certified to carry.

Provided that a ship of Class VIII (other than an oil tanker, chemical tanker, or gas carrier) may carry self righting partially enclosed lifeboats and a ship of Class VII or VIIA (other than an oil tanker, chemical tanker or gas carrier) normally engaged on voyages between the parallels of Latitude of 20° North and South may carry self righting partially enclosed lifeboats in lieu of totally enclosed lifeboats.

(2) In lieu of meeting the requirements of subclause (1) of this clause a ship to which this Code of Practice applies may carry:

(a) 1 or more totally enclosed lifeboats, capable of being free fall launched over the stern of the ship of such aggregate capacity as will accommodate the total number of persons the ship is certified to carry; and

(b) in addition, 1 or more liferafts on each side of the ship, of such aggregate capacity as will accommodate the total number of persons the ship is certified to carry. The liferafts on at least 1 side of the ship shall be served by launching appliances.

(3) In lieu of meeting the requirements of subclause (1) or (2) of this clause, a ship to which this Code of Practice applies, of less than 85m in length (other than an oil tanker, chemical tanker or gas carrier) may comply with the following:

(a) It shall carry on each side of the ship, 1 or more liferafts of such aggregate capacity as will accommodate the total

number of persons the ship is certified to carry and unless such liferafts can 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 per cent of the total number of persons the ship is certified to carry.

(b) If the rescue boat required by subclause (8) of this clause is also a partially enclosed or self righting partially enclosed lifeboat it may be included in the aggregate capacity required by subclause (3)(a) of this clause provided that the total capacity available on either side of the ship is at least 150 per cent of the total number of persons the ship is certified to carry.

(c) In the event of any 1 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 the ship is certified to carry.

(4) A ship to which this Code of Practice applies where the survival craft are stowed in a position which is more than 100m from the stem or stern shall carry, in addition to the liferafts required by subclause (1)(b) and (2)(b) of this clause, a liferaft stowed as far forward or aft, or one as far forward and another as far aft, as is reasonable and practicable. Such liferaft or liferafts may be securely fastened so as to permit manual release and need not be of the type which can be launched from an approved launching device.

(5) With the exception of the liferafts not served by launching appliances all survival craft required to provide for abandonment by the total number of persons the ship is certified to carry 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) The lifeboats carried on chemical tankers and on gas carriers carrying cargoes which may emit toxic vapours or gases shall be lifeboats with self contained air systems.

(7) The lifeboats carried on oil tankers, chemical tankers and gas carriers carrying cargoes having a flashpoint not exceeding 60°C (closed cup test) shall be fire protected lifeboats.

(8) Every ship of 500 gross tonnage or over shall carry at least 1 rescue boat, and every ship of less than 500 gross tonnage shall carry a 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.

3. Lifebuoys—(1) Every ship to which this Code of Practice applies shall carry not less than the number of lifebuoys prescribed in the following table.

<i>Length of Ship in metres</i>	<i>Minimum Number of Lifebuoys</i>
Under 100 metres and of less than 500 gross tonnage	4
Under 100 metres and of 500 gross tonnage or over	8
100 metres and under 150 metres	10
150 metres and under 200 metres	12
200 metres and over	14

(2) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 percent of the total number of lifebuoys shall be provided with self-igniting lights and not less than 2 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.

4. Lifejackets—(1) Every ship to which this Code of Practice applies shall carry a lifejacket for each person the ship is certified to carry and in addition, unless those lifejackets can be adapted for use by children, 1 children's lifejacket for each child carried.

(2) In addition to the lifejackets carried pursuant to sub-clause (1) of this clause there shall be carried sufficient lifejackets for

persons on watch and for use at remotely located survival craft stations. There shall be at least 4 such lifejackets where the number of persons on board is 16 or less and 25 per cent of the number of persons on board where that number exceeds 16.

(3) Included in the number of lifejackets required by subclauses (1) or (2) of this clause there shall be sufficient inflatable lifejackets for the crew of every 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.

(4) Each lifejacket carried on a ship to which this Code of Practice applies shall be fitted with a lifejacket light.

5. Immersion suits and thermal protective aids—(1) Every ship to which this Code of Practice applies shall carry an immersion suit of appropriate size for every person assigned to crew a rescue boat or inflated boat.

(2) Every ship of Class VII or VIIA to which this Code of Practice applies shall carry for each lifeboat on the ship at least 3 immersion suits and, in addition, a thermal protective aid for every person to be accommodated in the lifeboat and not provided with an immersion suit. These immersion suits and thermal protective aids need not be carried for persons to be accommodated in totally or partially enclosed lifeboats.

(3) Every ship of Class VII or VIIA which carries survival craft in accordance with the provisions of sub-clause 2(3) of this Code of Practice shall carry an immersion suit for every person which the ship is certified to carry unless:

(a) the liferafts are served by launching appliances or by equivalent approved launching arrangements which do not require entry into the water to board the liferaft; or

(b) the ship is normally engaged on voyages between the parallels of latitude of 20° North and South.

(4) The immersion suits required by sub-clause (2) of this clause may be used to comply with the requirements of sub-clause (1) of this clause.

6. Launching and boarding lifeboats and liferafts—(1) On every ship to which this Code of Practice applies 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.

(2) On every ship to which this Code of Practice applies of 20,000 gross tonnage and upwards, lifeboats shall be capable of being launched, where necessary utilising painters, with the ship making headway at speeds up to 5 knots in calm water.

7. Line-throwing appliance—Every ship to which this Code of Practice applies of 30m in length or over shall carry a line throwing appliance.

8. Distress flares—Every ship to which this Code of Practice applies shall carry at least 12 rocket parachute flares.

9. Portable radio equipment—Every ship of Class VII or Class VIIA to which this Code of Practice applies shall carry portable radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989.

10. Two-way radiotelephone—Every ship of Class VII, or Class VIIA, and every ship of Class VIII of 500 gross tonnage or over, shall carry at least 3 two-way radiotelephone sets.

11. Emergency Position-Indicating Radio Beacons—Every ship to which this Code of Practice applies shall carry 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.

12. Operating instructions, training manual and maintenance instructions—Every ship to which this Code of Practice applies of 500 gross tonnage or over shall be provided with:

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

(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; and

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

13. Emergency two-way communication—Every ship of Class VII and VIIA, and every ship of Class VIII of 500 gross tonnage or over, shall be provided with 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.

14. General emergency alarm system—Every ship of Class VII and VIIA, and every ship of Class VIII of 500 gross tonnage or over, shall be provided with a general emergency alarm system except that in ships of less than 45 metres in length the additional electrically operated means referred to in clause 25 of the Lifesaving Appliances (Code of Practice for General Requirements for Lifesaving Appliances) Notice 1989 need not be provided; in addition in ships of 500 gross tonnage or over either a public address system or other suitable means of communication shall be provided.

15. Emergency lighting for survival craft and muster stations—Every ship of Class VII and VIIA, and every ship of Class VIII of 500 gross tonnage or over, shall be provided with lighting as specified in clause 11 of the Lifesaving Appliances (Code of Practice for General Requirements for Lifesaving Appliances) Notice 1989 provided that in ships of Class VII or VIIA of less than 500 gross tonnage such lighting need only be provided from 1 source of electrical power.

16. Non-self-propelled ships of Class VIII—(1) Every manned non self-propelled ship of Class VIII which carries 4 persons or more on board shall carry:

(a) 1 or more liferafts of sufficient aggregate capacity to accommodate all persons on board so stowed as to be readily placed in the water on either side of the ship, and

(b) at least 2 lifebuoys, one of which shall be provided with a buoyant lifeline.

(2) Every manned non self-propelled ship of Class VIII to which this Code of Practice applies which carries less than 4 persons on board shall carry 2 lifebuoys, 1 of which shall be provided with a buoyant lifeline.

(3) Every manned non self-propelled ship of Class VIII shall carry a lifejacket for every person on board and, in addition, unless these lifejackets can be adapted for use by children, one children's lifejacket for each child carried.

(4) Every manned non self-propelled ship of Class VIII to which this Code of Practice applies shall carry at least 6 rocket parachute flares.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

g1

The Lifesaving Appliances (Code of Practice for Existing Ships of Class VII) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Existing Ships of Class VII) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Existing Ships of Class VII

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Child” For the purposes of these Regulations a “child” means a passenger weighing less than 32 kg and the term “childrens lifejacket” shall mean a lifejacket approved for use by a person weighing less than 32 kg.

“Existing ship” means a ship which is not a new ship.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“Inflated appliance” means an appliance which depends upon non-rigid, gas filled chambers for buoyancy and which is normally kept inflated and ready for use at all times.

“Launching appliance or arrangement” means an appliance or arrangement for transferring a survival craft, or boat from its stowed position safely to the water.

“New Ship” means a ship the keel of which is laid, or in respect of which a similar stage of construction is reached on the 1st day of July 1986 and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Person” means a person over the age of 1 year.

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

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

“Tanker” means a cargo ship constructed or adapted for the carriage in bulk of liquid cargoes of a flammable nature.

“Thermal protective aid” means a bag or suit made of waterproof material with low thermal conductivity.

Other expressions defined in the Act have the meaning so defined.

2. Ships of 500 gross tonnage or over—(1) Every ship of Class VII with a gross tonnage of 500 or over carry;

(a) On each side of the ship 1 or more lifeboats of sufficient aggregate capacity to accommodate all persons on board; and

(b) Liferrafts of sufficient aggregate capacity to accommodate the total number of persons on board.

(2) Where the ship is a tanker with a gross tonnage of 3,000 or over having an amidships superstructure the number of lifeboats on each side shall be at least 2 of which at least 1 shall be carried amidships and at least 1 aft.

(3) Where the ship is a tanker with a gross tonnage of 3,000 or over which does not have an amidships superstructure the

number of lifeboats on each side shall be at least 2 which shall be carried aft. Provided that in such a tanker only 1 lifeboat need be carried on each side if:

(a) it is of sufficient capacity to accommodate all persons on board, and does not exceed 8.5m in length; and

(b) it is carried as far forward as practicable, and at least so far forward that the after end of the lifeboat is 1½ times the length of the lifeboat forward of the ship's propeller; and

(c) it is carried as near the sea level as is safe and practicable.

3. Ships of less than 500 gross tonnage—Every ship of Class VII with a gross tonnage of less than 500 shall carry either;

(a) On each side of the ship 1 or more lifeboats of sufficient aggregate capacity to accommodate all persons on board; and liferafts of sufficient aggregate capacity to accommodate the total number of persons on board, or

(b) A rescue boat which is capable of being launched on 1 side of the ship and liferafts of sufficient aggregate capacity to accommodate twice the total number of persons on board.

4. Ships carrying 16 or more persons—If 16 persons or more are carried in a ship of Class VII the number of liferafts provided in compliance with this Code of Practice shall be at least 2.

5. Minimum length of lifeboats—In every ship of Class VII with a gross tonnage of 1,600 or over the lifeboats shall be not less than 7.3m in length; and in every such ship with a gross tonnage of less than 1,600 the lifeboats shall be not less than 4.9m in length.

6. Stowage of liferafts—Liferafts carried on a ship of Class VII shall be so stowed that they can be readily transferred to the water on either side of the ship.

7. Lifeboat davits—In every ship of Class VII each lifeboat shall be attached to a separate set of davits of the gravity type, except that in any ship, other than a tanker with a gross tonnage of 1,600 or over, luffing davits may be fitted for operating lifeboats weighing not more than 2,300kg in their turning out condition.

8. Provision of motor lifeboats—(1) In every ship of Class VII with a gross tonnage of 1,600 or over, other than a tanker, 1 of the lifeboats carried in compliance with clause 2(1)(a) of this Code of Practice shall be a motor lifeboat.

(2) In every ship of Class VII with a gross tonnage of 1,600 or over which is a tanker at least 1 of the lifeboats carried on each side of the ship in compliance with sub-clause 2(1)(a) of this Code of Practice shall be a motor lifeboat.

(3) Provided that on any ship of Class VII existing lifeboat arrangements shall be accepted but when any lifeboat is to be replaced it shall be replaced by a motor lifeboat until compliance with the requirements of sub-clauses (1) and (2) of this clause is achieved.

9. Liferrafts on ships of 150m in length or over which have no amidships superstructure—Every ship of Class VII of 150m in length or over which has no amidships superstructure shall carry in addition to the liferafts required under sub-clause 2(1)(b) of this Code of Practice a liferaft capable of accommodating at least 6 persons which shall be stowed as far forward as is reasonable and practicable and shall be securely fastened.

10. Portable radio equipment—Every ship of Class VII shall carry portable radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989.

11. Lifebuoys—(1) Every ship of Class VII with a gross tonnage of 500 or over shall carry at least 8 lifebuoys. Every ship of Class VII with a gross tonnage of less than 500 shall carry at least 4 lifebuoys.

(2) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 percent of the total

number of lifebuoys shall be provided with self igniting lights and not less than 2 of the lifebuoys provided with such lights shall also be provided with self activated smoke signals and be capable of quick release from the navigating bridge.

12. Lifejackets—Every ship of Class VII shall carry a lifejacket for every person which the ship is certified to carry and, in addition, unless these lifejackets can be adapted for use by children, 1 children's lifejacket for each child carried.

13. Line-throwing appliance—Every ship of Class VII shall carry a line-throwing appliance.

14. Distress flares—Every ship of Class VII shall carry at least 12 rocket parachute flares.

15. Immersion suits and thermal protective aids—(1) Every ship of Class VII shall carry for each lifeboat on the ship at least 3 immersion suits and, in addition, a thermal protective aid for every person to be accommodated in the lifeboat and not provided with an immersion suit. These immersion suits and thermal protective aids need not be carried for persons to be accommodated in totally or partially enclosed lifeboats.

(2) Every ship of Class VII shall carry an immersion suit of appropriate size for every person assigned to crew a rescue boat.

16. Emergency Position-Indicating Radio Beacons—Every ship of Class VII shall carry on each side of the ship at least 1 survival craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

h1

The Lifesaving Appliances (Code of Practice for Existing Ships of Class VIIA) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Existing Ships of Class VIIA) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Existing Ships of Class VIIA

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Approved” means approved in writing by the Director.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Child” For the purposes of these Regulations a “child” means a passenger weighing less than 32 kg and the term “childrens lifejacket” shall mean a lifejacket approved for use by a person weighing less than 32 kg.

“Existing ship” means a ship which is not a new ship.

“Launching appliance or arrangement” means an appliance or arrangement for transferring a survival craft, or boat from its stowed position safely to the water.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“New Ship” means a ship the keel of which is laid, or in respect of which a similar stage of construction is reached on the 1st day of July 1986 and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Person” means a person over the age of 1 year.

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

“Thermal protective aid” means a bag or suit made of waterproof material with low thermal conductivity.

Other expressions defined in the Act have the meaning so defined.

2. Ships of 500 gross tonnage or over—(1) Every ship of Class VIIA with a gross tonnage of 500 or over shall carry either:

(a) On each side of the ship lifeboats of sufficient aggregate capacity to accommodate 1/2 of the total number of persons the ship is certified to carry together with liferafts of sufficient aggregate capacity to accommodate 1/2 the total number of persons the ship is certified to carry; or

(b) Lifeboats and liferafts together providing sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry provided there shall never be less than sufficient lifeboats on each side of the ship to accommodate 37½ per cent of such total number of persons and there shall never be less than sufficient liferafts to accommodate 50 per cent of such total number of persons.

(2) On every ship of Class VIIA with a gross tonnage 500 or over, 2 of the lifeboats required by sub-clause (1) of this clause shall be kept ready, 1 on each side of the ship, for immediate use in an emergency while the ship is at sea. These emergency lifeboats shall be not more than 8.5m in length, and each of them may be a motor lifeboat and may be counted for the purpose of compliance with sub-clause (3) of this clause.

(3) In every ship of Class VIIA with a gross tonnage of 500 or over, at least 1 of the lifeboats carried on each side of the ship in compliance with sub-clause (1) of this clause shall be a motor lifeboat.

(4) In every ship of Class VIIA with a gross tonnage of 500 or over, which is certified to carry 1,500 persons or more, each of the motor lifeboats carried in compliance with sub-clause (3) of this clause shall be provided with radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989 and in every such ship which is certified to carry more than 199 and less than 1,500 persons at least 1 of the motor lifeboats carried in compliance with sub-clause (3) of this clause shall be so provided.

(5) Every motor lifeboat carried in compliance with this clause shall be provided with approved searchlight equipment.

(6) Every ship of Class VIIA with a gross tonnage of 500 or over which does not carry on each side of the ship a motor lifeboat provided with the radio equipment specified in subclause (4) of this clause shall carry portable radio equipment complying with the requirements of the Shipping (Radio) Regulations 1989.

(7) In every ship of Class VIIA with a gross tonnage of 1,600 or over, the lifeboats shall be not less than 7.3m in length; and in every such ship with a gross tonnage of less than 1,600 the lifeboats shall be not less than 4.9m in length.

(8) Each lifeboat carried in compliance with this clause shall be attached to a separate set of davits of the gravity type, except that luffing-type davits may be fitted for operating lifeboats

weighing not more than 2,300kg in their turning out condition.

(9) The liferafts carried in compliance with sub-clause (1)(b) of this clause shall be served by approved launching appliances. There shall never be less than 1 such appliance on each side of the ship, and the difference in the number of appliances fitted on each side shall not exceed 1.

(10)(a) Every ship of Class VIIA with a gross tonnage of 500 or over, shall carry at least 8 lifebuoys.

(b) At least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 per cent of the total number of lifebuoys shall be provided with self igniting lights and not less than 2 of the lifebuoys provided with such lights shall also be provided with self activated smoke signals and be capable of quick release from the navigating bridge.

(11) Every ship of Class VIIA with a gross tonnage of 500 or over, shall carry a lifejacket for every person the ship is certified to carry, and, in addition, unless these lifejackets can be adapted for use by children, 1 children's lifejacket for each child carried.

(12) Every ship of Class VIIA with a gross tonnage of 500 or over, shall carry a line-throwing appliance, and at least 12 rocket parachute flares.

(13) Every ship of Class VIIA with a gross tonnage of 500 or over, shall carry for each lifeboat on the ship at least 3 immersion suits and, in addition, a thermal protective aid for every person to be accommodated in the lifeboat and not provided with an immersion suit. These immersion suits and thermal protective aids need not be carried for persons to be accommodated in totally or partially enclosed lifeboats.

(14) Every ship of Class VIIA with a gross tonnage of 500 or over, shall carry an immersion suit of appropriate size for every person assigned to crew a rescue boat.

(15) Every ship of Class VIIA shall carry on each side of the ship at least 1 survival craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

3. Ships of less than 500 gross tonnage—Every ship of Class VIIA with a gross tonnage of less than 500 shall comply with the requirements of the Lifesaving Appliances (Code of Practice for Class X Ships) Notice 1989 as they apply to ships of Class X.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

11

The Lifesaving Appliances (Code of Practice for Existing Ships of Class VIII) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Existing Ships of Class VIII) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Existing Ships of Class VIII

1. Interpretation—In this Schedule unless the context otherwise requires

“The Act” means the Shipping and Seamen Act 1952.

“Child” means a person weighing less than 32 kg and the term “childrens lifejacket” means a lifejacket approved for a person weighing less than 32 kg.

“Class VIII ship” means a non-passenger ship engaged in the coastal trade.

“Dinghy” means a boat complying with the Shipping (Dinghies) Notice 1989.

“Existing ship” means a ship that is not a new ship.

“New ship” means a ship the keel of which is laid, or in respect of which a similar stage of construction is reached on the date of commencement of the Shipping (Lifesaving Appliances) Regulations 1989 and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Rescue Boat” means a boat designed to rescue persons in distress and to marshal survival craft.

Other expressions defined in the Act have the meaning so defined.

2. Ships of 30m in length or over—Every self-propelled ship of Class VIII of 30m in length or over shall carry either;

(a) On each side of the ship 1 or more lifeboats of sufficient aggregate capacity to accommodate all persons on board, together with liferafts of sufficient aggregate capacity to accommodate the total number of persons on board; or

(b) A rescue boat which is capable of being launched on 1 side of the ship and liferafts of sufficient aggregate capacity to accommodate twice the total number of persons on board.

3. Ships of less than 30m in length—Every self-propelled ship of Class VIII of less than 30m length but not less than 15m length shall carry at least 1 lifeboat, or rescue boat, or dinghy which is capable of being launched on 1 side of the ship together with liferafts of sufficient aggregate capacity to accommodate the total number of persons on board.

4. Ships of less than 15m in length—Every self-propelled ship of Class VIII of less than 15m length shall carry 1 or more liferafts of sufficient aggregate capacity to accommodate all persons on board.

5. Ships carrying 16 or more persons—If 16 persons or more are carried in a self-propelled ship of Class VIII the number of liferafts provided in compliance with this Code of Practice shall be at least 2.

6. Stowage of liferafts—Every liferaft carried by a self-propelled ship of Class VIII shall be so stowed that it can readily be placed in the water on either side of the ship.

7. Davits—Every lifeboat, rescue boat, or dinghy carried in a self-propelled ship of Class VIII shall be attached to a separate set of davits, or have other alternative means of launching approved by a surveyor.

8. Lifebuoys—(1) Every self-propelled ship of Class VIII shall carry at least the number of lifebuoys specified in the following table:

Length of Ship in Metres	Minimum Number of Lifebuoys
Less than 60	4
60 or more	8

(2) On every self-propelled ship of Class VIII where the total number of persons on board is less than 8, only 1 lifebuoy for every 2 persons need be carried, provided the minimum number of lifebuoys shall be 2.

(3) On every self-propelled ship of Class VIII at least 1 lifebuoy

on each side of the ship shall be fitted with a buoyant lifeline. Not less than 50 per cent of the total number of lifebuoys shall be provided with self-igniting lights and not less than 2 of the lifebuoys provided with such lights shall also be provided with self activated smoke signals and be capable of quick release from the navigating bridge.

9. Lifejackets—Every self-propelled ship of Class VIII shall carry a lifejacket for every person the ship is certified to carry and, in addition, unless these lifejackets can be adapted for use by children, 1 children's lifejacket for each child carried.

10. Line-throwing appliance—Every self-propelled ship of Class VIII of 30m in length or over shall carry a line-throwing appliance.

11. Distress flares—Every self-propelled ship of Class VIII shall carry at least 6 rocket parachute flares.

12. Emergency Position-Indicating Radio Beacons—Every self-propelled ship of Class VIII to which this Code of Practice applies shall carry on each side of the ship at least 1 survival craft emergency position-indicating radio beacon so stowed that it can be rapidly placed in any survival craft.

13. Non-self-propelled ships—(1) Every non-self-propelled ship of Class VIII which carries 4 persons or more on board shall carry:

(a) 1 or more liferafts of sufficient aggregate capacity to accommodate all persons on board so stowed as to be readily placed in the water on either side of the ship, and

(b) at least 2 lifebuoys, one of which shall be provided with a buoyant lifeline.

(2) Every non-self-propelled ship of Class VIII which carries less than 4 persons on board shall carry 2 lifebuoys, 1 of which shall be provided with a buoyant lifeline.

(3) Every non-self-propelled ship of Class VIII shall carry a lifejacket for every person on board and, in addition, unless these lifejackets can be adapted for use by children, one children's lifejacket for each child carried.

(4) Every manned non-self-propelled ship of Class VIII shall carry at least 6 rocket parachute flares.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

j1

The Lifesaving Appliances (Code of Practice for Ships of Class IX) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Ships of Class IX) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class IX

1. Interpretation—In this Schedule unless the context otherwise requires

“The Act” means the Shipping and Seamen Act 1952.

“Class IX ship” means a non-passenger ship which does not proceed beyond restricted limits.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as

equivalent to such certificate for the purpose of this Schedule.

“Child” means a person weighing less than 32 kg and the term “children's lifejacket” means a lifejacket approved for a person weighing less than 32 kg.

“Dinghy” means a boat complying with the Shipping (Dinghies) Notice 1989.

“Rescue Boat” means a boat designed to rescue persons in distress and to marshal survival craft.

Other expressions defined in the Act have the meaning so defined.

2. Ships of 45m or over in length—The Lifesaving Appliances (Code of Practice for Existing Ships of Class VIII) Notice 1989 applies to self-propelled ships of Class IX of 45m in length or over which proceed beyond extended river limits as it applies to self-propelled ships of Class VIII.

3. Non-self-propelled ships—The Lifesaving Appliances (Code of Practice for Existing Ships of Class VIII) Notice 1989 applies to non self-propelled ships of Class IX as it applies to non self-propelled ships of Class VIII.

4. Ships of 35m or over in length—Every self-propelled ship of Class IX of 35m in length or over but less than 45m in length which proceeds beyond Extended River Limits shall carry:

(a) a rescue boat or dinghy so stowed that it can readily be placed in the water on 1 side of the ship; and

(b) 1 or more liferafts of sufficient aggregate capacity to accommodate all persons the ship is certified to carry so stowed that they can be readily placed in the water on either side of the ship; and

(c) lifebuoys in accordance with clause 8 of this Code of Practice; and

(d) Lifejackets in accordance with the requirements of clause 9 of this Code of Practice.

5. Ships of less than 35m—Every self-propelled ship of Class IX of less than 35m in length which proceeds beyond Extended River Limits shall carry:

(a) 1 or more liferafts of sufficient aggregate capacity to accommodate all persons on board so stowed that they can be readily placed in the water on either side of the ship, and

(b) Lifebuoys in accordance with clause 8 of this Code of Practice; and

(c) Lifejackets in accordance with the requirements of clause 9 of this Code of Practice.

6. Ships which do not proceed beyond Extended River Limits—Every self-propelled ship of Class IX which does not proceed beyond Extended River Limits shall carry such boats, liferafts, buoyant apparatus or lifebuoys as are sufficient, together with lifebuoys in accordance with clause 8, for all persons on board, and in addition lifejackets in accordance with clause 9 of this Code of Practice.

7. Davits—Each lifeboat, rescue boat or dinghy provided in accordance with this Code of Practice shall be attached to davits or shall have other alternative means of launching approved by a surveyor.

8. Lifebuoys—(1) Every self-propelled ship of Class IX shall carry such lifebuoys as are specified in the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 15	1
15 or more but less than 24	2
24 or more but less than 45	4*

*provided that when carrying less than 8 persons only 1 lifebuoy for every 2 persons with a minimum of 2 lifebuoys need be carried.

(2) At least 1 of the lifebuoys shall be provided with a buoyant lifeline and at least 1 lifebuoy shall be provided with a self-igniting light.

9. Lifejackets—Every self-propelled ship of Class IX shall carry a lifejacket for every person the ship is certified to carry and, in addition, unless these lifejackets can be adapted for use by children, one children's lifejacket for each child carried.

10. Distress flares—(1) Every ship of Class IX which proceeds beyond Extended River Limits shall carry at least 6 rocket parachute flares and 2 buoyant smoke signals.

(2) Every ship of Class IX which proceeds beyond River Limits but not beyond Extended River Limits shall carry at least 2 rocket parachute flares and 2 buoyant smoke signals.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

k1

The Lifesaving Appliances (Code of Practice for Ships of Class X) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for Ships of Class X) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class X

1. Interpretation—In this Schedule unless the context otherwise requires

“The Act” means the Shipping and Seamen Act 1952.

“Certified” means certified by a certificate issued under section 219 of the Act or accepted by a surveyor as equivalent to such certificate for the purposes of this Schedule.

“Class X ship” means a fishing vessel as defined in the Act.

“Rescue Boat” means a boat designed to rescue persons in distress and to marshal survival craft.

Other expressions defined in the Act have the meaning so defined.

2. Ships of 75m in length or over—(1) Every ship of Class X of 75m in length or over shall carry on each side of the ship 1 or more lifeboats of sufficient aggregate capacity to accommodate half of the total number of persons the ship is certified to carry; together with liferafts on each side of the ship of sufficient aggregate capacity to accommodate half of the total number of persons the ship is certified to carry.

(2) Where the total number of persons the ship is certified to carry is less than 100, 1 of the lifeboats carried in compliance with sub-clause (1) of this clause shall be a motor lifeboat and in addition a motor rescue boat shall be carried unless the motor lifeboat fulfils the requirements for a motor rescue boat.

(3) Where the total number of persons the ship is certified to carry is 100 or more, 1 of the lifeboats carried on each side of the ship in compliance with sub-clause (1) of this clause shall be a motor lifeboat; and in addition 1 motor rescue boat shall be carried unless 1 of the motor lifeboats fulfils the requirements for a motor rescue boat.

3. Ships of 45m in length or over—Every ship of Class X of 45m in length or over but less than 75m in length shall carry:

(a) On each side of the ship 1 or more lifeboats or liferafts of sufficient aggregate capacity to accommodate all persons the ship is certified to carry.

Provided that where lifeboats are carried there shall be sufficient liferafts of aggregate capacity to accommodate half of the total number of persons the ship is certified to carry; and

(b) A motor rescue boat which is capable of being launched on 1 side of the ship unless 1 of the lifeboats which may be carried in compliance with paragraph (a) of this clause fulfils the requirements for a rescue boat:

Provided that, if the total number of persons is 100 or more, 1 motor rescue boat shall be carried on each side of the ship unless 1 of the lifeboats on each side of the ship which may be carried in compliance with paragraph (a) of this clause fulfils the requirements for a motor rescue boat.

4. Ships of 27.5m to 45m in length—Every ship of Class X of less than 45m in length but not less than 27.5m in length shall carry either:

(a) A lifeboat which is capable of being launched on 1 side of the ship and is of sufficient capacity to accommodate the total number of persons the ship is certified to carry together with 1 or more liferafts of sufficient aggregate capacity to accommodate all persons the ship is certified to carry; and a rescue boat unless the lifeboat fulfils the requirements for a rescue boat; or

(b) A rescue boat which is capable of being launched on 1 side of the ship and on each side of the ship liferafts of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry.

5. Ships of 12m to 27.5m in length—Every ship of Class X of less than 27.5m in length but not less than 12m in length shall carry 1 or more liferafts of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry.

6. Ships of less than 12m in length—Every ship of Class X of less than 12m in length shall carry either liferafts or buoyant apparatus or lifebuoys of sufficient aggregate capacity to accommodate the total number of persons the ship is certified to carry but there shall be at least 1 lifebuoy.

7. Ships carrying 16 or more persons—If 16 persons or more are carried in a ship of Class X the number of liferafts provided in compliance with this Code of Practice shall be at least 2.

8. Davits in ships of 45m in length or over—In every ship of Class X of 45m in length or over each lifeboat shall be attached to a separate set of davits of the gravity type, except that luffing type davits may be fitted for operating lifeboats weighing not more than 2300kg in their turning out condition.

9. Davits in ships of less than 45m in length—In every ship of Class X of less than 45m length each lifeboat shall be attached to a set of davits or a single arm davit.

10. Stowage of liferafts—Liferafts carried on a ship of Class X shall be so stowed that they can be readily transferred to the water on either side of the ship.

11. Lifebuoys—(1) Every ship of Class X shall carry the minimum number of lifebuoys determined in accordance with the following table:

<i>Length of Ship in Metres</i>	<i>Minimum Number of Lifebuoys</i>
Less than 12	1
12 or more but less than 27.5	2
27.5 or more but less than 45	4*
45 or more but less than 75	6*
75 or more	8*

*Provided that when certified to carry less than 8 persons only

1 lifebuoy for every 2 persons need be carried, with a minimum of 2 lifebuoys.

(2) In ships of Class X of 24m in length or over at least 1 lifebuoy on each side of the ship shall be fitted with a buoyant lifeline and 1 lifebuoy on each side of the ship shall be fitted with a self igniting light.

(3) In ships of Class X of less than 24m length at least 1 lifebuoy shall be fitted with a buoyant lifeline and 1 lifebuoy shall be provided with a self igniting light.

12. Lifejackets—Every ship of Class X shall carry a lifejacket for every person the ship is certified to carry.

13. Line-throwing appliance—Every ship of Class X of 30m in length or over shall carry a line-throwing appliance.

14. Flares—(1) Every ship of Class X which is a Deep Sea Fishing Vessel shall carry at least 6 rocket parachute flares and 2 buoyant smoke signals.

(2) Every ship of Class X which is a Coastal Fishing Vessel or Inshore Fishing Vessel and which proceeds beyond River Limits shall carry at least 4 rocket parachute flares and 2 buoyant smoke signals.

15. Emergency Position-Indicating Radio Beacon—Every ship of Class X shall carry at least 1 emergency position-indicating radio beacon stowed adjacent to the steering position in the wheelhouse.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

n1

The Lifesaving Appliances (Code of Practice for General Requirements for Lifesaving Appliances) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Lifesaving Appliances (Code of Practice for General Requirements for Lifesaving Appliances) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Code of Practice for General Requirements for Lifesaving Appliances

1. Interpretation—In this Schedule unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

“Approved” means approved in writing by the Director.

“Buoyant apparatus” means flotation equipment (other than lifebuoys and lifejackets) designed to support persons who are in the water.

“Certificated Person” means a member of the crew who holds either a Certificate of Proficiency in Survival Craft or a Certificate of Efficiency as a Lifeboatman issued or recognised by the Secretary.

“Dinghy” means a boat complying with the provisions of the Shipping (Dinghies) Notice 1989.

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

“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 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.

“Immersion suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water.

“Launching appliance or arrangement” means an appliance or arrangement for transferring a survival craft, or boat from its stowed position safely to the water.

“Marine escape system” means a system whereby persons are evacuated from a ship into survival craft by means of an inflated chute and inflated survival craft boarding platform.

“Person” means a person over the age of 1 year.

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

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

“Thermal protective aid” means a bag or suit made of waterproof material with low thermal conductivity.

Other expressions defined in the Act have the meaning so defined.

2. Performance Standards—(1) For the purposes of this Code of Practice lifesaving appliances and arrangements shall include lifeboats, rescue boats, dinghies, liferafts, buoyant apparatus, lifebuoys, lifejackets, pyrotechnic distress signals, line throwing appliances, immersion suits, thermal protective aids, emergency position-indicating radio beacons and all davits, launching appliances or other devices or appertenances associated therewith and all equipment and fittings to be carried or attached thereon or thereto.

(2) Lifesaving appliances and arrangements required by the Shipping (Lifesaving Appliances) Regulations 1989 shall be of a type acceptable to the Director.

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

(4) The Director may specify the period of acceptability of life-saving appliances which are subject to deterioration with age. Such life-saving appliances shall be marked with a means for determining their age or the date by which they must be replaced.

3. Evaluation, Testing and Acceptance of Life-Saving Appliances and Arrangements—(1) Subject to the provisions of sub-clause (2) of this clause the lifesaving appliances and arrangements required by the Shipping (Lifesaving Appliances) Regulations 1989 which comply with the provisions of a performance standard or which have been approved outside New Zealand by a party to the 1974 SOLAS Convention and which in the opinion of the Director are substantially equivalent to the requirements prescribed in performance standards shall be accepted for the purposes of this Code of Practice.

(2) Lifesaving appliances and arrangements for which performance standards have not been issued or which have not previously been approved pursuant to sub-clause (1) of this clause shall be accepted by a Surveyor if he is satisfied that these appliances and arrangements comply with the requirements of the Shipping (Lifesaving Appliances) Regulations 1989 and are suitable for their intended purpose.

(3) Before accepting life-saving appliances and arrangements, in compliance with the performance standards the Director shall ensure that such life-saving appliances and arrangements:

(a) have been tested, to confirm that they comply with the requirements of the Shipping (Lifesaving Appliances) Regulations 1989 in accordance with recommendations of the International Maritime Organisation, or

(b) have successfully undergone, to the satisfaction of the Director, tests which are substantially equivalent to those specified in those recommendations.

4. Production Tests—The Director may require life-saving appliances to be subjected to such production tests as are considered necessary by the Director to ensure that life-saving appliances are manufactured to the same standard as the accepted prototype. Such tests may be required to be on a random or regular basis.

5. Construction of Lifeboats, Rescue Boats, Dinghies, Liferrafts and Buoyant Apparatus—(1) Every lifeboat, rescue boat, dinghy, liferaft or buoyant apparatus carried in a ship to which the Shipping (Lifesaving Appliances) Regulations 1989 apply shall be constructed in accordance with performance standards. Provided that any lifeboat, rescue boat, dinghy, liferaft or buoyant apparatus accepted for carriage on an existing ship may continue to be so carried so long as it remains in good order and condition to the satisfaction of a surveyor.

(2) Where any lifeboat, rescue boat, dinghy, liferaft or buoyant apparatus carried on an existing ship to which the Shipping (Lifesaving Appliances) Regulations 1989 apply is to be replaced it shall so far as is practicable be replaced with a lifeboat, rescue boat, dinghy, liferaft, or buoyant apparatus complying with the provisions of a performance standard issued pursuant to clause 2 of this Code of Practice.

6. Carrying Capacity of Lifeboats, Rescue Boats and Dinghies—The number of persons which a lifeboat, rescue boat or dinghy shall be deemed fit to carry shall be determined in accordance with performance standards.

Provided that for existing lifeboats, rescue boats or dinghies on existing ships, the capacity marked thereon at the commencement of the Shipping (Lifesaving Appliances) Regulations 1989, as determined under the Shipping Lifesaving Appliances Rules 1968, shall continue to be accepted for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

7. Carrying Capacity of Liferrafts and Buoyant Apparatus—(1) Subject to the provisions of sub-clauses (2) and (3) of this clause the number of persons which a liferaft shall be deemed fit to carry and a buoyant apparatus shall be deemed fit to support shall be determined in accordance with the provisions of performance standards.

(2) Every liferaft carried in a ship of Class I, II, III, VII, VIII or VIII shall have a capacity of not less than 6 persons and every liferaft carried in a ship of Class IV, V, VI, IX, or X shall have a capacity of not less than 4 persons.

(3) Unless the liferaft is to be launched by a launching appliance complying with the requirements of the performance standard for launching appliances 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.

8. Marking of Lifeboats, Rescue Boats, Dinghies, Liferrafts and Buoyant Apparatus—(1) The dimensions of a lifeboat, rescue boat or dinghy and the number of persons which each is deemed fit to carry shall be clearly marked on it in permanent characters. The name and port of registry of the ship to which a lifeboat or rescue boat belongs shall also be marked in permanent characters on each side of the bow.

(2) The number of persons which an inflatable liferaft is deemed fit to carry shall be clearly marked in permanent characters on the liferaft and on the valise or other container in which the liferaft is contained when not in use. Every such liferaft shall also bear a serial number and the manufacturer's name.

(3) The number of persons which a rigid liferaft is deemed fit to carry shall be clearly marked in permanent characters on the liferaft. The name and port of Registry of the ship on

which it is carried shall also be painted or marked on the liferaft.

(4) The number of persons which a buoyant apparatus is deemed fit to support shall be clearly marked on it in permanent characters.

9. Operational Readiness, Maintenance, Inspections and Servicing—(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 the Performance Standard for Training Manual and Maintenance Instruction.

(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 the Performance Standard for Training Manual and Maintenance Instruction. A report of the inspection shall be entered in the log referred to in clause 4 (7) of Part II of that standard.

(7) Liferaft automatic release hooks shall be serviced at intervals not exceeding 30 months and shall be proof tested at 100 per cent 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 servicing station or at the works of the manufacturer at intervals of not more than 12 months; provided that in any case where a surveyor is satisfied that this is not reasonable or practicable he may extend such intervals by a period not exceeding 3 months in any one instance and cumulatively by not more than 5 months in any period of 4 consecutive years.

(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 a servicing station as soon as practicable.

10. Operating Instructions for Survival Craft and their Launching Controls—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, VII, VIIA and VIII;

(c) where applicable use symbols which are approved by the Director.

11. Survival Craft Muster and Embarkation Arrangements—(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, and II 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 every ship of Class I or II, an electric lighting system shall be provided throughout the ship and in particular upon the decks from which lifeboats and liferafts are embarked. Provision shall also be made in every such ship for electric lighting for:

(a) illumination of the launching gear and of the lifeboats, and of the liferaft launching appliances where provided and the liferafts which they serve, during the preparation for and process of launching, and

(b) for illuminating the water into which the lifeboats and those liferafts served by launching appliances are launched until the process of launching is completed, and

(c) for illuminating the stowage position of liferafts for which launching appliances are not provided. The lighting shall be operated from the ship's main generating plant and shall be so arranged that power may be supplied from the emergency source of power required by the Shipping (Construction) Regulations 1989.

(5) In every ship of Class I, or II the exit from every main compartment occupied by passengers or crew shall be continuously lighted by an emergency electric lamp, operated from the ship's main generating plant and so arranged that power may be supplied from the emergency source of power required by the Shipping (Construction) Regulations 1989.

(6) In every ship of Class VII or VIIA, with a gross tonnage of 500 or over, provision shall be made for:

(a) electric lighting of the launching gear and of the lifeboats and of the liferaft launching appliances where provided, and of the liferafts which they serve, during the preparation for and process of launching, and

(b) for lighting the water into which the lifeboats, and the liferafts served by launching appliances are launched until the process of launching is completed and

(c) for the lighting of the stowage position of liferafts for which launching appliances are not provided.

(7) In every ship of Class VII or VIIA, with a gross tonnage of 1,600 or over, provision shall be made for the electric lighting of the alleyways, stairways, and exits so as to ensure that access of all persons on board to the launching stations and stowage positions of lifeboats and liferafts is not impeded.

(8) The lighting required by sub-clauses (4) and (5) of this clause shall be operated from the ship's main electric generating plant, and in addition shall be capable of being operated from an emergency source of electric power provided for such lighting and capable of operating for a period of at least 3 hours.

(9) In every ship of Class VII, or VIIA, with a gross tonnage of less than 500 and in every ship of Class VIII, and in every ship of Class X of 24m in length or over, means shall be provided

for the electric lighting of the launching gear and lifeboats, rescue boats, or dinghies during the preparation for and process of launching and also for the lighting of the stowage position of the liferafts:

Provided that in existing ships in which, in the opinion of a surveyor, it is not considered practicable or reasonable to fit permanent lighting in compliance with the requirements of this sub-clause, self-contained portable electric battery-operated hand lamps capable of functioning efficiently for at least 3 hours may be provided.

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

(11) In ships of Classes I, II, VII, VIIA, VIII, 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 1 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 and stowed as far forward as reasonable and practicable on non-passenger ships of 150m in length or over which have no amidships superstructure.

(12) 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.

(13) On ships of Classes I and II 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 the liferaft is transferred prior to launching.

(14) 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-clause 13(a) of this clause 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.

(15) On ships of Classes VII, VIIA and VIII, 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.

12. Stowage of Survival Craft, Rescue Boats and Inflated Boats—(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° 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 2 crew members can carry out preparations for embarkation and launching in less than 5 minutes;

(d) fully equipped;

(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, VIIA or VIII, of 80 metres in length and over 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 over and on ships of Classes I, II of 80 metres in length and over, 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 subclause (7) or (8) of this clause 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-clause (1)(b) of this clause or by ship motion or power failure, provided that the liferafts required to be carried and stowed as far forward as reasonable and practicable on non-passenger ships of 150m in length or over which have no amidships superstructure, 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 such liferafts are required to be carried and stowed on each side of the ship.

(7) On ships of Classes I, II, VII, VIIA, VIII or X 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 the Performance Standard for Liferafts so that the liferaft floats free and, if inflatable, inflates automatically when the ship sinks. In the case of existing ships, the float-free arrangement shall be provided before the 1st day of January 1990.

(8) 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 clause for the stowage of lifeboats.

(9) 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.

13. Launching Stations—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 Director.

14. Survival Craft Launching Arrangements—(1) Launching appliances complying with the requirements of the performance standard for launching appliances 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° and with the ship listed not less than 20° 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 per cent of the total number of persons on board the ship; and

(c) the liferafts stowed as far forward or aft required on non-passenger ships of 150m in length or over which have no amidships superstructure;

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 1 type of release mechanism shall be used for similar survival craft carried on board the ship.

(4) On ships of Classes I and II 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, VIIA or VIII, with the exception of the survival craft referred to in sub-clause (1)(a) of this clause, 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, VIIA and VIII of 20,000 gross tonnage and upwards, lifeboats shall be capable of being launched, where necessary utilising 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) Means shall be available to prevent any discharge of water on to survival craft during abandonment.

(9) 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.

15. Marine Escape Systems—(1) A marine escape system or systems complying with the requirements of the Performance Standard for Marine Escape Systems may be substituted on ships of Class II for some or all of the liferafts and launching appliances required by clause (2)(1)(c) of the Code of Practice for Existing Ships of Classes I and II or clause (2)(1)(c) of the Code of Practice for New Ships of Classes I and II. 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 clause 2(13) of the Code of Practice for Existing Ships of Classes I and II or clause 2(4) of the Code of Practice for New Ships of Classes I and II provide the same aggregate capacity as that required by clause (2)(1)(c) of the

Code of Practice for Existing Ships of Classes I and II or clause (2)(1)(c) of the Code of Practice for New Ships of Classes I and II.

(2) Where one or more marine escape system is provided on a ship, all such systems shall be subjected to a trial deployment after installation, and each system shall also be deployed thereafter at such intervals as may be specified by the Director.

(3) Where such a marine escape system is provided, provision for training the crew in its use shall be made.

16. Rescue Boat Embarkation, Launching and Recovery Arrangements—(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 clauses 11 and 13 of this Code of Practice.

(3) Launching arrangements shall comply with the requirements of clause 14 of this Code of Practice and rescue boat launching appliances shall comply with the requirements of the performance standard for launching appliances. All rescue boats shall be capable of being launched, where necessary utilising 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 rescue boat complement or 6 persons whichever is the greater.

17. Stowage of Lifebuoys—(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 1 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 1 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.

18. Stowage of Lifejackets—(1) Lifejackets shall be stowed in locations approved by a surveyor and shall be readily accessible to persons on board in an emergency. Lifejackets for berthed passengers may be stowed adjacent to their berths and lifejackets for unberthed passengers shall be stowed in or adjacent to public rooms or muster stations. In ships of Classes I and II not less than 5 per cent of the number of lifejackets carried for passengers shall be stowed in lockers on or adjacent to open decks or muster stations. The stowage position of all lifejackets shall be clearly and permanently indicated.

(2) Where due to the particular arrangements of a ship, the lifejackets provided in compliance with the requirements of the Shipping (Lifesaving Appliances) Regulations 1989 may become inaccessible, alternative provisions shall be made to the satisfaction of a Surveyor which may include an increase in the number of lifejackets to be carried.

19. Stowage of Portable Radio Equipment—Portable radio equipment for survival craft 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.

20. Stowage and Packing of Pyrotechnic Distress Signals—(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.

21. Immersion Suits and Thermal Protective Aids—(1) 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 1 December and 30 April, both dates inclusive.

(2) Thermal protective aids may be bags or suits provided they are made of waterproof material of low thermal conductivity and so constructed as to reduce both the convective and evaporative heat loss from the wearer's body.

22. Manning of Survival Craft—On ships of Classes I, II, VII, VIIA, and VIII:

(1) 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.

(2) 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.

(3) Except as otherwise provided in this clause a deck officer or certificated person shall be placed in charge of each liferaft to be used. In ships of Class II 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.

(4) 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.

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

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

(7) A person capable of operating the engine and carrying out minor adjustments shall be assigned to every motorised survival craft.

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

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

(10) The master shall ensure the equitable distribution of persons referred to in this clause when compiling the muster list referred to in the Shipping (Musters and Drills) Regulations 1989.

23. Lifejacket Lights—(1) Every lifejacket carried on a ship of any of the Classes I, VII, VIIA, VIII and X shall be fitted with a lifejacket light.

(2) Every lifejacket carried on a ship of any of the Classes II and III and intended for use by a member of the crew shall be fitted with a lifejacket light, and every other lifejacket carried on such a ship shall be fitted with a lifejacket light not later than 1 July 1991.

(3) Every lifejacket light shall be of a type which is approved by the Director.

24. Radio Equipment—(1) Lifeboats which are required to be provided with radiotelegraph equipment shall be provided with the lifeboat radiotelegraph equipment prescribed in the Shipping (Radio) Regulations 1989.

(2) Portable radio equipment required to be carried in compliance with the Shipping (Lifesaving Appliances) Regulations 1989 shall comply with the requirements of the Shipping (Radio) Regulations 1989.

25. General Emergency Alarm Systems—(1) The general emergency alarm system shall be capable of sounding the general emergency alarm signal consisting of 7 or more short blasts followed by 1 long blast on the ship's whistle or siren and additionally, in the case of ships of Classes I, II and of Classes VII, VIIA or VIII of 45 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 the Shipping (Construction) Regulations 1989.

(2) The system shall be capable of operating 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 places.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

11

The Shipping (Lifeboats) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Lifeboats) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Lifeboats

PART I

General (Including Equipment)

1. Interpretation—

(1) In this performance standard,—

“Director” means the person who is for the time being the Director of the Marine Division of the Ministry of Transport; and includes the deputy of the Director:

“Length of lifeboat” means the length of the lifeboat in metres from the inside of the shell at the top of the stern to the corresponding point at the top of the stern post; and in the case of a lifeboat with a square stern the length is measured to the inside of the top of the transom:

“The LSA Regulations” means the Shipping (Lifesaving Appliances) Regulations 1989.

(2) Any reference in this performance standard to ships of any class shall be read as reference to ships of the same class under the LSA Regulations.

2. General—All lifeboats prescribed in this Part shall:

- (a) be constructed with proper workmanship and materials;
- (b) be free from damage in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout a seawater temperature range of -1°C to $+30^{\circ}\text{C}$;

(d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) be of a highly visible colour on all parts where this will assist detection;

(g) 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 a Surveyor of Ships;

(h) be capable of satisfactory operation in a sea environment; and

(i) be not less than 4.9 metres in length.

3. Construction—(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 buoyancy material and no other damage.

(2) All lifeboats shall be of sufficient strength to:

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

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

(3) Hulls and rigid covers shall be fire-retardant or non-combustible.

(4) Seating shall be provided on thwarts, benches or fixed chairs fitted as low as practicable in the lifeboat and constructed so as to be capable of supporting the number of persons each weighing 100kg for which spaces are provided in compliance with the requirements of sub-clause (9) of this clause.

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

(a) 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

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

(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.

(7) The vertical distance between the floor surface and the interior of the enclosure or canopy over 50 percent of the floor area shall be:

(a) Not less than 1.3 metres for a lifeboat permitted to accommodate 9 persons or less;

(b) Not less than 1.7 metres for a lifeboat permitted to accommodate 24 persons or more;

(c) 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.

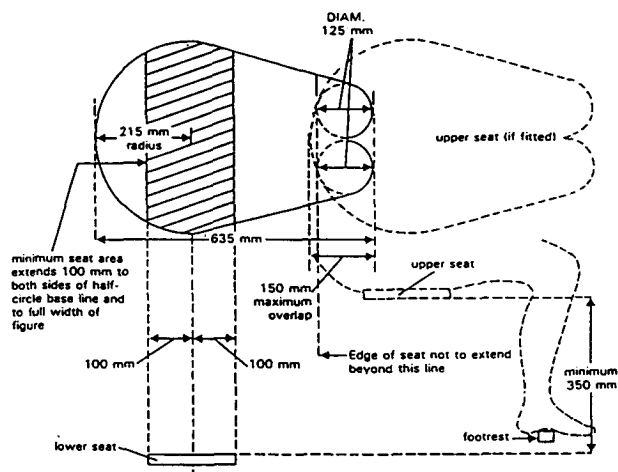
(8) No lifeboat shall be deemed fit to accommodate more than 150 persons.

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

(a) the number of persons having an average mass of 75kg,

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 lifeboat's equipment; or

(b) 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 350mm.



(10) Each seating position shall be clearly indicated in the lifeboat.

(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.

(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.

(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.

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

(15) All surfaces on which persons might walk shall have a non-skid finish.

(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.

(17) Every lifeboat, when loaded with 50 percent of the number of persons the lifeboat is permitted to accommodate seated in their normal positions to 1 side of the centreline, shall have a freeboard, measured from the waterline to the lowest opening through which the lifeboat may become flooded, of at least 1.5 percent of the lifeboat's length or 100mm, whichever is the greater.

4. Lifeboat Propulsion—(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:

(a) be provided with either a manual starting system, or a power starting system with 2 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 Director, 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;

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

(c) be capable of operating when the lifeboat is flooded up to the centreline of the crankshaft; and

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

(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 propulsion of the craft.

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

(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.

(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.

(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.

(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 lifesaving appliances used in the lifeboat.

(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 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.

(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—(1) All lifeboats shall be provided with at least 1 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.

(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.

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

(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) 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 clause 7 of this performance standard. Means shall be provided for the storage of collected rainwater.

(6) Every lifeboat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part VII of this performance standard.

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

(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 portable radio apparatus required by the L.S.A. Regulations.

(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.

(10) A manually controlled lamp complying with the requirements of Part IX of this performance standard shall be fitted to the top of the cover or enclosure.

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

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

(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—(1) The dimensions of the lifeboat, 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 lifeboat in clear permanent characters.

(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.

(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—All items of lifeboat equipment, whether required by this clause or elsewhere in this performance standard, 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:

(a) 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;

(b) 2 boat-hooks;

(c) a buoyant bailer and 2 buckets;

(d) a survival manual;

(e) a binnacle containing an efficient compass complying with the requirements of Part V of the Performance Standard for Survival Craft Equipment and Rations 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;

(f) a sea-anchor complying with the requirements of Part I of the Performance Standard for Survival Craft Equipment and Rations.

(g) 2 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; 1 painter attached to the release device required by clause 5(7) of this performance standard 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;

(h) 2 hatchets, 1 at each end of the lifeboat;

(i) watertight receptacles complying with the requirements of Part IV of the Performance Standard for Survival Craft Equipment and Rations 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;

(j) 3 rustproof graduated drinking vessels, 1 suitably graduated in millilitres;

(k) 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;

(l) 4 rocket parachute flares;

(m) 6 hand flares;

(n) 2 buoyant smoke signals;

(o) 1 waterproof electric torch suitable for Morse signalling together with 1 spare set of batteries and one spare bulb in a waterproof container;

(p) 1 daylight signalling mirror with instructions for its use for signalling to ships and aircraft.

(q) 1 copy of the Rescue Signal Table;

(r) 1 whistle or equivalent sound signal;

(s) a first-aid outfit complying with the requirements of Part II of the Performance Standard for Survival Craft Equipment and Rations;

(t) 6 doses of anti-seasickness medicine and 1 seasickness bag for each person;

(u) a Jack-knife to be kept attached to the boat by a lanyard;

(v) 3 tin-openers;

(w) 2 buoyant rescue quoits, attached to not less than 30 metres of buoyant line;

(x) a manual pump complying with the requirements of Part VIII of this performance standard;

(y) 1 set of fishing tackle;

(z) sufficient tools for minor adjustments to the engine and its accessories;

(aa) 2 portable fire-extinguishers suitable for extinguishing oil fires;

(ab) 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;

(ac) an efficient radar reflector;

(ad) thermal protective aids sufficient for 10 percent of the number of persons the lifeboat is permitted to accommodate or 2, whichever is the greater.

8. Instructions and Information—Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions issued under the L.S.A. Regulations and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the lifeboat and its equipment;

(b) installation arrangements;

(c) operational instructions including use of associated survival equipment;

(d) survival instructions;

(e) emergency repair instructions;

(f) deployment, boarding and launching instructions;

(g) method of launching from within the boat;

(h) release from launching appliance;

(i) on-board maintenance requirements;

(j) servicing requirements;

(k) use of engine and accessories; and

(l) recovery of boat including stowage and securing.

PART II

Partially Enclosed Lifeboats

9. All partially enclosed lifeboats shall comply with the requirements of Part I of this performance standard, and in addition shall comply with the requirements of this Part.

10. Means of Bailing—Every partially enclosed lifeboat shall be provided with effective means of bailing or be automatically self-bailing.

11. Enclosure—(1) Permanently attached rigid covers shall be provided extending over not less than 20 percent of the length of the lifeboat from the stem and not less than 20 percent of the length of the lifeboat from the aftermost part of the lifeboat.

(2) The rigid covers shall form 2 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) 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.

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

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

(a) it can be easily erected by not more than 2 persons; and

(b) it is insulated to protect the occupants against cold by means of not less than 2 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.

(6) The enclosure formed by the rigid covers and canopy shall be so arranged:

(a) as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

(b) 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;

(c) that with the canopy erected and all entrances closed, sufficient air is admitted for the occupants at all times;

(d) that it has means for collecting rainwater;

(e) 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; and

(f) that it is possible to row the lifeboat.

12. Radiotelegraph Installations—Any radiotelegraph installation required by the L.S.A. Regulations 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 Director.

PART III

Self-righting Partially Enclosed Lifeboats

13. All self-righting partially enclosed lifeboats shall comply with the requirements of Part I of this performance standard, and in addition shall comply with the requirements of this Part.

14. Enclosure—(1) Permanently attached rigid covers shall be provided extending over not less than 20 percent of the length of the lifeboat from the stem and not less than 20 percent of the length of the lifeboat from the aftermost part of the lifeboat.

(2) The rigid covers shall form 2 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.

(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.

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

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

(a) it can be easily erected by not more than 2 persons in not more than 2 minutes; and

(b) it is insulated to protect the occupants against cold by means of not less than 2 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.

(6) The enclosure formed by the rigid covers and canopy shall be so arranged:

(a) as to allow launching and recovery operations to be performed without any occupant having to leave the enclosure;

(b) 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.

(c) that with the canopy erected and all entrances closed, sufficient air is admitted for the occupants at all times;

(d) that it has means for collecting rainwater;

(e) 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; and

(f) that it is possible to row the lifeboat.

15. Capsizing and Re-righting—(1) A 4-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 100kg securely in place when the lifeboat is in a capsized position.

(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.

16. Propulsion—(1) The engine and transmission shall be controlled from the helmsman's position.

(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.

(3) Air-cooled engines shall have a duct system to take in cooling air from, and to 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.

17. Construction and Fendering—(1) Notwithstanding the requirements of clause 3(6) of Part I of this performance standard 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 the 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.

(2) The lifeboat shall be automatically self-bailing

18. Radiotelegraph Installations—Any radiotelegraph installation required by the L.S.A. Regulations 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 Director.

PART IV

Totally Enclosed Lifeboats

19. All totally enclosed lifeboats shall comply with the requirements of Part I of this performance standard, and in addition shall comply with the requirements of this Part.

20. Enclosure—(1) Every totally enclosed lifeboat shall be provided with a rigid watertight enclosure which completely encloses the lifeboat.

(2) The enclosure shall be so arranged that:

(a) it protects the occupants against heat and cold;

(b) access to the lifeboat is provided by hatches which can be closed to make the lifeboat watertight;

(c) hatches are positioned so as to allow launching and

recovery operations to be performed without any occupant having to leave the enclosure;

(d) 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;

(e) it is possible to row the lifeboat;

(f) 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;

(g) 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;

(h) its exterior is of a highly visible colour and its interior of a colour which does not cause discomfort to the occupants;

(i) handrails provide a secure handhold for persons moving about the exterior of the lifeboat, and aid embarkation and disembarkation;

(j) persons have access to their seats from an entrance without having to climb over thwarts or other obstructions; and

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

21. Capsizing and Re-righting—(1) A 4-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 100kg securely in place when the lifeboat is in a capsized position.

(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) The lifeboat shall be capable of supporting its full complement of persons and equipment when the lifeboat is in the damaged condition prescribed in clause 3(1) of Part I of this performance standard 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.

(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

22. Propulsion—(1) The engine and transmission shall be controlled from the helmsman's position.

(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.

(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.

23. Construction and Fendering—Notwithstanding the requirements of clause 3(6) of Part I of this performance standard 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.

24. 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.

PART V

Lifeboats With a Self-contained Air Support System

25. All lifeboats with a self-contained air support system shall comply with the requirements of Parts I and IV of this performance standard and in addition 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 pressure of the air supply at all times.

PART VI

Fire-protected Lifeboats

26. All fire-protected lifeboats in this Part shall comply with the requirements of Parts I, IV and V of this performance standard, and in addition shall comply with the requirements of this Part.

27. Fire Protection—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.

28. Water Spray System—A lifeboat which has a water spray fire-protection system shall comply with the following:

(a) 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;

(b) the seawater intake shall be so arranged as to prevent the intake of flammable liquids from the sea surface; and

(c) the system shall be arranged for flushing with fresh water and allowing complete drainage.

PART VII

Lifeboat Disengaging Gears

29. Arrangement—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.

30. Means of Release—The means of effecting release shall be placed near the coxswain's position.

31. Release Capabilities—The gear shall have 2 release capabilities as follows:

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

(b) 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.

32. Means of Connecting Hooks—The means of connection between the hook(s), safety device and the operating lever or release unit shall:

(a) be arranged and led so as to ensure the efficient operation of the gear;

(b) wherever necessary, be properly cased in for the safety or efficient action of the gear or for the protection of persons from injury; and

(c) where cased in, means shall be provided for lubricating this equipment.

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

34. Parts to be Non-corrodible—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.

35. Safety Factor—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.

PART VIII

Manual Pumps

36. Capacity—The capacity of lifeboat manual pumps, when operated at not more than 60 double strokes per minute at 1.2 metres suction head, shall be not less than:

(a) 30 litres per minute in lifeboats of 7 metres in length or over; or

(b) 20 litres per minute in lifeboats of less than 7 metres length.

37. Pump to be Self-priming—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.

38. Pumps to be Non-corrodible—All parts of the pump shall be of material unaffected by the corrosive effects of sea water.

39. Interior of Pump to be Accessible—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.

40. General—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.

PART IX

Lifeboat Lights

41. General—Every internal and external light shall

(a) be provided with a manually operated switch; and

(b) be connected independently to its own power source unless it is operated from the lifeboat's battery system.

42. Construction—(1) Internal and External Lights

(a) the complete light unit shall be constructed with proper workmanship and materials;

(b) it shall be capable of withstanding the drop test for a lifeboat;

(c) it shall be capable of withstanding a drop of 2 metres onto a rigidly mounted steel plate or concrete surface;

(d) it shall be rot proof, corrosion resistant, and not be unduly affected by sea-water, oil or fungal growth;

(e) it shall not deteriorate due to damp or humidity when stowed in or on a lifeboat;

(f) the power source shall be proofed against leakage of any chemicals which could damage or cause deterioration of the lifeboat;

(g) the connection between light and power shall be suitably protected;

(h) the lamp, lamp holder and lens shall be so constructed to prevent the ingress of water; and

(i) if the external light is a flashing light, it shall not be fitted with a lens or curved reflector to concentrate the beam.

43. Performance—(1) Internal and External Lights

(a) the lights shall have an operational endurance of not less than 12 hours;

(b) they shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$; and

(c) they shall operate in a satisfactory manner throughout a seawater temperature of -1°C to $+30^{\circ}\text{C}$.

(2) Internal Light

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

(3) External Light

(a) the light shall be visible on a dark night with a clear atmosphere at a distance of at least 2 miles

(b) 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.

(c) 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.

(d) when fitted to a fire-protected lifeboat, the light should be arranged such that it is protected by the water spray system.

44. Markings—(1) Internal and External Lights

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

(a) the manufacturer's name or trade mark;

(b) the type and batch number;

(c) date of manufacture and expiry; and

(d) the words "MOT APPROVED" or mark of another approving authority.

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

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

p1

The Shipping (Liferafts) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Liferafts) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Liferafts

PART I

Inflatable Liferafts (SOLAS)

1. General—All inflatable liferafts prescribed in this Part shall:

(a) be constructed with proper workmanship and materials;

(b) not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$, and a sea water temperature range of -1°C to $+30^{\circ}\text{C}$;

(d) be rot-proof, corrosion-resistant, and not be unduly affected by sea water, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) have a canopy of a highly visible colour;

(g) 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 a Surveyor of Ships;

(h) when fully inflated and floating with the canopy uppermost be stable in a seaway.

2. Construction—(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) 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.

(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.

(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 1 of its sea-anchors streamed.

(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:

(a) it shall provide insulation against heat and cold by means of either 2 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;

(b) its interior shall be of a colour that does not cause discomfort to the occupants;

(c) 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 8 persons shall have at least 2 diametrically opposite entrances;

(d) it shall admit sufficient air for the occupants at all times, even with the entrances closed;

(e) it shall be provided with at least 1 viewing port in liferafts accommodating up to 25 persons and at least 2 diametrically opposite viewing ports in liferafts accommodating more than 25 persons;

(f) it shall be provided with means for collecting rain water;

(g) it shall have sufficient headroom for seated occupants under all parts of the canopy.

(6) The main buoyancy chamber shall be divided into:

(a) not less than 2 separate compartments, each inflated through a non-return inflation valve on each compartment;

(b) the buoyancy chambers shall be so arranged that in the event of 1 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.

(7) The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold either:

(a) by means of 1 or more compartments that the occupants can inflate, or which inflate automatically and can be deflated and reinflated by the occupants; or

(b) by other equally efficient means not dependent on inflation.

(8) The liferaft shall be inflated with a non-toxic gas by an inflation system complying with the requirements of Part VIII of this performance standard. 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.

(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 this performance standard so that the working pressure can be maintained.

(10) The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:

(a) 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

(b) 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

(c) 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.

(11) No liferaft shall be approved which has a carrying capacity of less than 6 persons calculated in accordance with the requirements of sub-clause (10) of this clause, except that in ships of Classes III, IV, V, VI, IX, or X the minimum carrying capacity of liferafts may be 4 persons, provided that liferafts which are deemed fit to accommodate less than 6 persons shall only be carried on such ships in which the total number of persons on board is less than 6.

(12) Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of Part III of the Performance Standard for Launching Appliances and is not required to be portable, the total mass of the liferaft, its container and its equipment shall not be more than 185kg.

3. Liferaft Fittings—(1) Lifelines shall be securely becketed around the inside and outside of the liferaft.

(2) The liferaft shall be provided with arrangements for adequately siting and securing in the operating position the antenna provided with portable radio equipment required by the LSA Regulations.

(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.

(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 this performance standard shall be:

(a) 7.5 kilonewtons for liferafts accommodating up to 8 persons;

(b) 10.0 kilonewtons for liferafts accommodating 9 to 25 persons;

(c) 15.0 kilonewtons for liferafts accommodating more than 25 persons or have a factor of safety of 3 in association with the requirement of clause 2(4) above whichever is the greater.

(5) At least 1 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 2 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 bowing lines and embarkation facilities are fitted.

(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.

(7) There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

(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 1 person. Liferafts in excess of 25 persons capacity shall have righting facilities acceptable to the Chief Surveyor. The righting position of the liferaft shall be suitably marked and have a non-skid surface.

(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.

(10) The liferaft shall be fitted with water pockets complying with the following requirements:

(a) 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.

(b) The design shall be such that the pockets fill to approximately 60 percent of capacity within 15–25 seconds of deployment.

(c) 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.

(d) The pockets to be fitted on liferafts certified to carry more than 10 persons shall have an aggregate capacity of $(20 \times N)$ litres, where $N =$ Number of persons carried but in no case should the aggregate capacity be less than $(18 \times N)$ litres.

(e) The pockets shall be attached on all of their sides to the underside of the liferaft.

(f) The pockets shall be distributed symmetrically round the circumference of the liferaft either side of the CO₂ bottle with sufficient separation between each pocket to enable air to escape readily. The minimum number of pockets shall normally be in accordance with the following table:

Raft Capacity	No. of Pockets
4–5 inclusive	4
6–8 inclusive	5
9–16 inclusive	7
17–25 inclusive	11

Any arrangement less than the above must be submitted to the Chief Surveyor for consideration.

(11) Any equivalent stability arrangement other than that detailed in paragraph (10) of this clause must be submitted to the Director for consideration.

(12) At least 1 manually controlled lamp complying with the requirements of Part VII of this performance standard shall be fitted to the top outside of the liferaft canopy.

(13) A manually controlled lamp complying with the

requirements of Part VII of this performance standard shall be fitted inside the liferaft.

(14) Each inflatable liferaft shall be fitted with equipment complying with the relevant requirements of Part IV of this performance standard.

4. Containers for Inflatable Liferafts—(1) The liferaft shall be packed in a container that is:

(a) so constructed as to withstand conditions encountered at sea;

(b) 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;

(c) as far as practicable watertight, except for drain holes in the container bottom.

(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.

(3) The container shall be marked with:

(a) maker's name or trade mark;

(b) serial number;

(c) M.O.T. APPROVED, (or mark of another approving authority) and the number of persons it is permitted to carry;

(d) SOLAS 86;

(e) type of emergency pack enclosed;

(f) date when last serviced;

(g) length of painter;

(h) maximum permitted height of stowage above waterline (depending on drop-test height and length of painter);

(i) launching instructions.

5. Markings on Inflatable Liferafts—The liferaft shall be marked with:

(a) maker's name or trade mark;

(b) serial number;

(c) date of manufacture (month and year);

(d) M.O.T. APPROVED (or mark of other approving authority);

(e) name and place of servicing station where it was last serviced;

(f) 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—(1) In addition to the above requirements, a liferaft for use with an approved launching appliance complying with Part III of the Performance Standard for Launching Appliances shall:

(a) 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;

(b) 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 bowing line securing point shall be kept to a minimum to restrict movement of the liferaft during boarding;

(c) when suspended from its lifting hook or bridle withstand a load of:

(i) 4 times the mass of its full complement of persons and equipment, at an ambient temperature and a stabilised liferaft temperature of $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ with all relief valves inoperative; and

(ii) 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.

(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.

(3) Every passenger ship davit-launched liferaft shall be so arranged that it can be rapidly boarded by its full complement of persons.

(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 the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the liferaft and its equipment;

(b) installation arrangements;

(c) operational instructions including use of associated survival equipment;

(d) survival instructions;

(e) emergency repair instructions;

(f) deployment, boarding and launching instructions;

(g) method of launching from within the raft;

(h) release from launching appliance;

(i) on board maintenance requirements;

(j) servicing requirements.

PART II

Inflatable Liferafts (Non SOLAS)

8. General—(1) Liferafts carried on board ships of Classes III, IV, V, VI, IX and X (Coastal) shall comply with the requirements of Part I of this performance standard provided that clauses 1(b), 2(2), 2(5)(f), 2(7)(a), 2(8), 2(11), 3(3), 3(5), 4(3)(d) and 6(1)(c)(ii), may be modified as follows:

(a) the drop height of 18 metres referred to in clause 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;

(b) the means for collecting rain referred to in clause 2(5)(f) of Part I need not be provided;

(c) the means for insulating the floor of the liferaft against cold as referred to in clause 2(7)(a) of Part I need not be provided;

(d) the temperature of -30°C referred to in clauses 1(b), 2(8) and 6(1)(c)(ii) of Part I may be -18°C ;

(e) the minimum carrying capacity of liferafts may be 4 persons provided that liferafts which are deemed fit to accommodate less than 6 persons shall only be carried on such ships on which the total number of persons on board is less than 6;

(f) 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.

(g) the semi-rigid boarding ramp(s) referred to in clause 3(5) of Part I need not be fitted.

(h) the container shall be marked with M.O.T. (NZ)'86 or

mark of other approving authority in lieu of the marking required by clause 4(3)(d) of Part I.

PART III

Rigid Liferafts

9. General—(1) All rigid liferafts prescribed in this Part shall:

- (a) be constructed with proper workmanship and materials;
- (b) not be damaged in stowage throughout the air temperature range of -30°C to $+65^{\circ}\text{C}$;
- (c) be capable of operating throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$, and a sea water temperature range of -1°C to $+30^{\circ}\text{C}$;
- (d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;
- (e) be resistant to deterioration from exposure to sunlight;
- (f) have a canopy of a highly visible colour;
- (g) 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 a Surveyor;
- (h) when floating with the canopy uppermost be stable in a seaway.

10. Construction—(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) 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.

(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.

(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.

(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:

(a) it shall provide insulation against heat and cold by means of either 2 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;

(b) its interior shall be of a colour that does not cause discomfort to the occupants;

(c) 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 8 persons shall have at least 2 diametrically opposite entrances;

(d) it shall admit sufficient air for the occupants at all times, even with the entrances closed;

(e) it shall be provided with at least 1 viewing port;

(f) it shall be provided with means for collecting rain water;

(g) it shall have sufficient head room for seated occupants under all parts of the canopy.

(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.

(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.

(8) The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:

(a) 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

(b) 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

(c) the number of persons having an average mass of 75kg, all wearing lifejackets, that can be seated with sufficient comfort and head room without interfering with the operation of any of the liferaft's equipment.

(9) No liferaft shall be approved which has a carrying capacity of less than 6 persons calculated in accordance with the requirements of subclause (8) of this clause.

(10) Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of Part III of the Performance Standard for Launching Appliances and is not required to be portable, the total mass of the liferaft, its container, and equipment shall not be more than 185kg.

11. Liferaft Fittings—(1) Lifelines shall be securely becketed around the inside and outside of the liferaft.

(2) The liferaft shall be provided with arrangements for adequately siting and securing in the operating position the antenna provided with portable radio equipment required by the LSA Regulations.

(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.

(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 this performance standard shall be:

(a) 7.5 kilonewtons for liferafts accommodating up to 8 persons;

(b) 10.0 kilonewtons for liferafts accommodating 9 to 25 persons;

(c) 15.0 kilonewtons for liferafts accommodating more than 25 persons or have a factor of safety of 3 in association with the requirement of clause 10 (4) of this performance standard above whichever is the greater.

(5) At least 1 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 1 entrance, the boarding ramp shall not be fitted at the entrance where bowing lines and embarkation facilities are fitted.

(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.

(7) There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

(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 1 person.

(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.

(10) At least 1 manually controlled lamp complying with the requirements of Part VII of this performance standard shall be fitted to the top outside of the liferaft canopy.

(11) A manually controlled lamp complying with the

requirements of part VII of this performance standard shall be fitted inside the liferaft.

(12) Each rigid liferaft shall be fitted with equipment complying with the relevant requirements of Part IV of this performance standard.

12. Markings on Rigid Liferafts—(1) The liferafts shall be marked with:

- (a) name and port of registry of the ship to which it belongs;
- (b) maker's name or trade mark;
- (c) serial number;
- (d) M.O.T. APPROVED (or mark of another approving authority);
- (e) 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;
- (f) SOLAS 86;
- (g) type of emergency pack enclosed;
- (h) length of painter;
- (i) date of manufacture (month and year);
- (j) maximum permitted height of stowage above waterline (depending on drop-test height and length of painter);
- (k) launching instructions.

13. Davit-launched Rigid Liferafts—(1) In addition to the above requirements, a rigid liferaft for use with an approved launching appliance complying with Part III of the Performance Standard for Launching Appliances shall:

- (a) when suspended from its lifting hook or bridle, withstand a load of 4 times the mass of its full complement of persons and equipment;
- (b) 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;
- (c) 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 bowing line securing point shall be kept to a minimum to restrict movement of the liferaft during boarding.

(2) Every passenger ship davit-launched liferaft shall be so arranged that it can be rapidly boarded by its full complement of persons.

(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.

14. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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 concise form and shall include the following:

- (a) general description of the liferaft and its equipment;
- (b) installation arrangements;
- (c) operational instructions including use of associated survival equipment;
- (d) survival instructions;
- (e) emergency repair instructions;
- (f) deployment, boarding and launching instructions;
- (g) method of launching from within the raft;

- (h) release from launching appliance;
- (i) on board maintenance requirements;
- (j) servicing requirements.

PART IV

Liferaft Equipment

15. Equipment for SOLAS Liferafts—(1) Subject to the provisions of clauses 16, 17 and 18 of this Part, the equipment of every liferaft shall consist of:

- (a) 1 buoyant rescue quito, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0kN;
- (b) 1 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;
- (c) 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, 2 buoyant bailers;
- (d) 2 sponges;
- (e) 2 sea-anchors each complying with the requirements of Part I of the Performance Standard for Survival Craft Equipment and Rations, 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;
- (f) 2 buoyant paddles;
- (g) 3 tin-openers; safety knives containing special tin-opener blades are satisfactory for this requirement;
- (h) 1 first-aid outfit complying with the requirements of Part II of the Performance Standard for Survival Craft Equipment and Rations, in a waterproof case capable of being closed tightly after use;
- (i) 1 whistle or equivalent sound signal;
- (j) 4 rocket parachute flares;
- (k) 6 hand flares;
- (l) 2 buoyant smoke signals;
- (m) 1 waterproof electric torch suitable for Morse signalling together with 1 spare set of batteries and 1 spare bulb in a waterproof container;
- (n) an efficient radar reflector;
- (o) 1 daylight signalling mirror with instructions on its use for signalling to ships and aircraft;
- (p) 1 copy of the Rescue Signal Table;
- (q) 1 set of fishing tackle;
- (r) a food ration complying with the requirements of Part III of the Performance Standard for Survival Craft Equipment and Rations 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;
- (s) watertight receptacles containing a total of 1.5 litres of fresh water complying with the requirements of Part IV of the Performance Standard for Survival Craft Equipment and Rations, 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;
- (t) 1 rustproof drinking vessel graduated in millilitres;

- (u) 6 doses of anti-seasickness medicine and 1 seasickness bag for each person the liferaft is permitted to accommodate;
- (v) instructions printed in English on how to survive;
- (w) instructions for immediate action;
- (x) thermal protective aids sufficient for 10 percent of the number of persons the liferaft is permitted to accommodate or 2, whichever is the greater.

(2) Liferafts equipped in accordance with clause 1(1) shall be marked in block capitals of the Roman alphabet, "SOLAS A PACK".

16. Equipment for Liferafts on Coastal Ships—(1) Liferafts carried on ships of Classes II, III, VIII and X (Coastal) shall be provided with the equipment specified in clauses 1(1)(a) to 1(1)(f) inclusive, 1(1)(h), 1(1)(i), 1(1)(m) to 1(1)(p) inclusive and 1(1)(u) to 1(1)(x) inclusive and 1/2 of the equipment specified in clauses 1(1)(j) to 1(1)(l) inclusive.

(2) Liferafts equipped in accordance with clause 2(1) shall be marked in block capitals of the Roman alphabet, "SOLAS B PACK".

17. Equipment for Liferafts on Restricted-Limit Ships—(1) Liferafts carried on board ships of Classes IV, V, VI, IX and X (Inshore) shall be provided with the equipment specified in clauses 1(1)(a) to 1(1)(d) inclusive, 1(1)(f), 1(1)(i), 1(1)(m), 1(1)(p), 1(1)(u) to 1(1)(w) inclusive and 1/2 of the equipment specified in clauses 1(1)(e) and 1(1)(k).

(2) Liferafts equipped in accordance with sub-clause (1) of this clause shall be marked in block capitals of the Roman alphabet, "M.O.T. C PACK".

18. Stowage of Equipment—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 2kN or a breaking strain of 3:1 based on the mass of the complete equipment pack, whichever is the greater.

19. Additional Equipment for Inflatable Liferafts—(1) In addition to the above requirements every inflatable liferaft shall be provided with:

- (a) 1 repair outfit for repairing punctures in buoyancy compartments;
 - (b) 1 topping-up pump or bellows.
- (2) The knives required by sub-clause (1)(b) of this clause shall be safety knives.

PART V

Automatic Release Hooks

20. Definitions—(1) In this Part the following definitions apply:

- (a) "actuating force" means the force required to set the actuating mechanism;
- (b) "actuating mechanism" means the mechanism which, when operated, allows the liferaft to be released automatically;
- (c) "automatic release mechanism" means the mechanism which opens the hook automatically to release the liferaft;
- (d) "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.

21. Functional Criteria—(1) The hook shall be reliable and easily handled by 1 person during the preparation, embarkation, launching and release of the liferaft.

(2) The hook and its accessories shall be made of materials suitable for use in the marine environment.

(3) A minimum factor of safety of 6 based on the ultimate

strength of the materials used shall be applied to the design of all parts of the hook.

(4) The lever for manual release and the actuating mechanism may be separate.

(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.

(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.

(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.

22. Compatibility—The compatibility 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 Director.

23. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance.

(2) Instructions and information shall be in English in a clear concise form and shall include the operation and maintenance of the automatic release hook.

PART VI

Float Free Arrangements

24. General—Float free arrangements shall provide for a liferaft to be released automatically in the event of a ship sinking.

25. 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.

26. Hydrostatic Release Unit(1) Construction

A hydrostatic release unit used in the float-free arrangements shall be so constructed that:

- (a) 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.
- (b) it has drains to prevent the accumulation of water in the hydrostatic chamber when the unit is in its normal position;
- (c) each part connected to the painter system has a strength not less than that required by the painter;
- (d) it can readily be removed for replacement or annual servicing.

(2) Materials and Components

Materials and components shall be corrosion-resistant and not affected by seawater, oil or detergents.

(3) Performance

A hydrostatic release unit shall:

(a) function properly throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$;

(b) function properly throughout a seawater temperature range of -1°C to $+30^{\circ}\text{C}$;

- (c) automatically release the liferaft at a depth of not more than 4 metres;
- (d) not release prematurely when seas wash over the unit;
- (e) be capable of releasing a liferaft when the stowage is:
 - (i) horizontal;
 - (ii) tilted 45° and 100° with the hydrostatic release unit at the upper side;
 - (iii) tilted 45° and 100° with the hydrostatic release unit at the lower side;
 - (iv) vertical.

(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:

- (a) requires annual servicing with its date of manufacture and a small plate permanently attached to the unit for recording the date of servicing;
- (b) is disposable, with the date at which it must be replaced.

(5) Instructions and Information

Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

- (a) general description of the unit;
- (b) installation instructions;
- (c) any on board maintenance requirements;
- (d) servicing requirements;

27. Weak Link—(1) Construction and Materials

A weak link used in the float-free arrangements shall:

- (a) be made from a material which is corrosion resistant and not affected by seawater, oil or detergent;
- (b) when made of cordage have the ends either whipped or heat treated;
- (c) when made from a flexible wire have each end looped around a thimble and secured with a locking ferrule.

(2) Performance

A weak link shall be of sufficient strength to:

- (a) pull the painter out of the liferaft container;
- (b) operate the liferaft inflation system;
- (c) break under a tensile force of between 1.8 and 2.6 kN.

PART VII

Liferaft Lights

28. General—(1) Internal and External Lights

(a) 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.

(b) Each light shall be connected independently to its own power source.

(c) The external light may be of a flashing type.

29. Construction of Internal and External Lights—

(a) The complete light unit shall be constructed with proper workmanship and materials.

(b) It shall be capable of withstanding the drop-test on a liferaft without damage to the light or the liferaft.

(c) It shall be capable of withstanding a drop of 2 metres on to a rigidly mounted steel plate or concrete surface.

(d) It shall be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal growth.

(e) It shall not deteriorate due to damp or humidity when stowed with a liferaft in its container.

(f) The power source shall be a sea activated or dry chemical cell battery.

(g) 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.

(h) The connection between light and power source shall be suitably protected.

(i) 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.

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

(k) A flashing light shall not be fitted with a lens or curved reflector to concentrate the beam.

30. Performance of Internal and External Lights—(1)

(a) The lights shall have an operational endurance of not less than 12 hours.

(b) They shall not be damaged in storage and shall operate in a satisfactory manner throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(c) They shall operate in a satisfactory manner throughout a seawater temperature of -1°C to $+30^{\circ}\text{C}$.

(d) They shall have a shelf life of not less than 3 years.

(2) The internal light shall be of sufficient luminous intensity to enable survival and equipment instructions to be read.

(3) The external light shall:

(a) be visible on a dark night with a clear atmosphere at a distance of at least 2 miles.

(b) 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.

(c) in the case of a flashing light, flash at a rate of not less than 50 flashes per minute for the first 2 hours of operation.

31. Markings of Internal and External Lights—(1) The power source shall be marked externally with:

(a) the manufacturer's name or trade mark;

(b) the type and batch number;

(c) date of manufacture and expiry;

(d) the words "M.O.T. APPROVED" (or mark of another approving authority).

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

PART VIII

Gas Inflation System

32. 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 $18-20^{\circ}\text{C}$, 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 $+65^{\circ}\text{C}$ 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 1 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 $+65^{\circ}\text{C}$.

(8) The inflation system shall operate in a satisfactory manner throughout a seawater temperature of -1°C to $+30^{\circ}\text{C}$.

(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 Director.

33. 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 or approved equivalent Standard.

(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 or approved equivalent Standard.

(5) The excess gas from the relief valves must not be discharged into the liferaft.

34. Gas Cylinders—(1) The gas cylinder shall be acceptable to the Director and must be constructed to the standard laid down in the relevant part of British Standard 5045: Specification for Transportable Gas Containers or approved equivalent.

(2) The gas cylinder shall be periodically inspected, tested, and maintained in accordance with the relevant part of British Standard 5430 or approved equivalent.

(3) Recharging of the gas cylinder shall be carried out at a filling station acceptable to the Director.

(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:

(a) date of manufacture; serial number, and name or mark of the manufacturer;

(b) standard or specification to which it is manufactured;

(c) date of testing and test pressure;

(d) tare mass of cylinder, and valve;

(e) minimum designed water capacity in litres.

(9) The gas cylinder after charging shall be clearly stencilled with:

(a) tare mass;

(b) details of gas charge;

(c) total mass of cylinder, valve and contents.

35. Gas Cylinder Valve—(1) The cylinder valve shall be fitted with a safety relief device which will operate between 18MPa 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.

36. 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 $18-20^{\circ}\text{C}$.

(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.

37. 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 Director.

(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 21MPa at an ambient temperature $18-20^{\circ}\text{C}$ 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 $+65^{\circ}\text{C}$.

(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 12.5MPa.

(10) Every hose shall be carefully inspected and marked by the manufacturer's quality inspector.

(11) The hose shall be marked externally with:

- (a) name of manufacturer;
- (b) part or serial number;
- (c) test date;
- (d) mark of inspector.

38. 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 Director. They shall be suitably protected against damage and the ingress of water.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

m1

The Shipping (Marine Escape Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Marine Escape Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Marine Escape Systems

Part I

Construction and Performance

1. General—(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, an agreed number of inflatable liferafts and an agreed number of rescue boats or inflated boats.

(2) The systems shall:

(a) be constructed with proper workmanship and materials;

(b) not be damaged in stowage throughout a temperature range of -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$, and a seawater temperature range of -2°C to $+30^{\circ}\text{C}$;

(d) where applicable be rot-proof, corrosion-resistant and not be unduly affected by seawater, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) be of highly visible colour on all parts that will assist detection;

(g) be fitted with retro-reflective material where it will assist detection;

(h) be sited clear of propellers and stabilisers;

(i) be capable of removal for annual servicing;

(j) be fitted with float free facilities complying with the requirements of Part VI of the Performance Standard for Liferafts on those parts of the system intended for use as inflatable survival equipment;

(k) be provided with a gas inflation arrangement complying with the requirements of Part VIII of the Performance Standard for Liferafts which will by a single action rapidly deploy and inflate the system;

(l) be provided with an additional gas supply of capacity at least 50 percent of that required to inflate the system so that any loss of pressure sustained during a deployment can rapidly be replenished;

(m) 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;

(n) be capable of satisfactory operation in a seaway.

2. Construction—(1) The container housing the escape chute and boarding platform shall:

(a) 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 percent in excess of that imposed upon it in the above condition without causing damage or distortion to either the boom or the container;

(b) be suitably constructed on the outboard side to resist damage and to prevent the ingress of water;

(c) be suitably protected on the inboard side to prevent damage or accidental deployment by unauthorised personnel;

(d) be prominently labelled on the inboard side with clear deployment instructions;

(e) be large enough to house the gas inflation system;

(f) be provided with a secure, but single action quick release of the outer door;

(g) be constructed so that deployment of the system over the side will also activate the inflation arrangements;

(h) be provided with a safe access to the top of the chute for evacuees;

(i) 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;

(j) be fitted on board with portable securing arrangements so that it can be removed for annual servicing;

(k) be provided with adequate drainage arrangements.

(2) The Escape Chute shall:

(a) consist of a single or double track slide with each track of sufficient width to provide unrestricted evacuation by persons wearing an approved type of lifejacket;

(b) be of sufficient strength in its fully inflated condition to safely support a load of 300kg (150kg for a single track slide) at mid length without bending or distorting;

(c) be subdivided such that the loss of gas in any 1 compartment will not restrict its operational use as a means of evacuation;

(d) be provided with a slide path which will drain quickly and be safe to operate in wet conditions;

(e) be provided with vertically inflated panels on each side of the slide path of sufficient depth to permit safe evacuation in severe weather conditions;

(f) be effectively connected to the chute container by arrangements which are capable of withstanding a load which is at least 200 percent greater than the load imposed in the maximum loaded condition.

(3) The Boarding Platform shall:

(a) be stable in a seaway and provide a safe working area for the system operators;

(b) be self draining;

(c) be subdivided in such a way that the loss of gas from any 1 compartment will not restrict its operational use as a means of evacuation;

(d) be capable of supporting twice the number of persons carried in the largest inflatable liferaft associated with the system;

(e) be constructed in accordance with the buoyancy and floor area parameters stated in Part I of the Performance Standard for Liferrafts;

(f) be fitted with stabilising waterpockets designed in accordance with the standards stated in Part I of the Performance Standard for Liferrafts;

(g) be restrained by a bowing 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;

(h) be provided with mooring and bowing line patches of sufficient strength to tie off the largest inflatable liferaft associated with the system;

(i) 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 the Performance Standard for Liferrafts.

3. Performance of the System—A marine escape system shall:

(a) be capable of deployment by 1 person at the embarkation position;

(b) not interfere with the deployment of any other life-saving equipment fitted in the ship;

(c) be capable of evacuating 200 percent of its designed capacity without significant deterioration of the slide paths;

(d) be capable of satisfactory operation in a seaway;

(e) 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;

(f) be capable of being deployed from a passenger ship with a trim and list 50 percent in excess of the limits in the final stage of flooding set by the requirements of the Shipping (Construction) Regulations 1989.

(g) for initial approval, be evaluated by means of timed evacuation deployments conducted both in harbour and at sea.

4. Associated Inflatable Liferrafts—An inflatable liferaft used in conjunction with the marine escape system shall:

(a) conform with the requirements of Part 1 of the Performance Standard for Liferrafts;

(b) be sited close to the system container but be capable of dropping clear of the deployed chute and boarding platform;

(c) be capable of release from its stowage rack with arrangements which will enable it to be moored and inflated alongside the boarding platform;

(d) be capable of release from its stowage rack as an independent item of life-saving equipment;

(e) be provided with float free arrangements complying with the requirements of Part VI of the Performance Standard for Liferrafts.

5. Instructions and Information—Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the system;

(b) installation arrangements;

(c) operational instructions for the system, and associated survival craft;

(d) on-board maintenance requirements;

(e) servicing requirements.

Part II

Training

6. Facilities for crew training in the use of marine escape systems shall include:

(a) the provision on board of an operational manual for the system and its associated inflatable liferafts;

(b) the provision of on-board training aids;

(c) the provision ashore of a training course including as far as is possible practical exercises with full size equipment.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU1

The Shipping (Launching Appliances and Embarkation Ladders) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Launching Appliances and Embarkation Ladders) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby

prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Launching Appliances and Embarkation Ladders

Part I

General

1. Launching Appliances—General Requirements—(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°:

(a) after being boarded by its full complement of persons at the stowed position or from an embarkation deck, as appropriate;

(b) without persons in the survival craft or rescue boat.

(2) Notwithstanding the requirements of clause 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:

(a) Regulation 29(3)(c) of the United Kingdom Merchant Shipping (Prevention of Oil Pollution) Regulations 1983;

(b) Paragraph 2.9.2.2 of the International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;

(c) Paragraph 2.9.1.2 of the International Code for the Construction and Equipment of Ships carrying Liquefied Gases in Bulk;

as applicable, shall be capable of operating at the final angle of heel on the lower side of the ship.

(3) Davits, winches, falls, blocks and all other launching gear shall comply with the requirements of Parts II, III or IV of this performance standard.

(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—(1) An efficient hand gear shall be provided for recovery of each survival craft and rescue boat.

(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.

(3) A lifeboat launching appliance shall be capable of recovering and stowing the lifeboat with its launching crew.

(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.

(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.

(6) Except in the case where a rescue boat is fitted with single point suspension, every rescue boat carried in compliance with the Shipping (Lifesaving Appliances) Regulations 1989 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 1 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.

(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.

(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—(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—(1) Every free-fall launching appliance using an inclined plane shall, in addition to complying with the applicable requirements of clause 1 of this part also comply with the following requirements:

(a) The launching appliance shall be so arranged that excessive forces are not experienced by the occupants of the survival craft during launching.

(b) 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.

(c) 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—(1) Every evacuation-slide launching appliance shall, in addition to complying with the applicable requirements of clause 1 of this Part also comply with the requirements of the Performance Standard for Marine Escape Systems.

6. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) description of launching appliance and winch, where provided;

(b) operation for launching and recovery; and

(c) maintenance.

Part II

Lifeboat and Rescue Boat Launching Appliances

7. Definition of "Working Load"—(1) In this Part the expression "Working Load" means:

(a) in relation to davits to which clauses 8(1) and 8(2) of this Part 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 75kg;

(b) 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.

8. Construction—(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) 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.

(3) The arrangements of the davits shall be such as to enable safe boarding of the lifeboat in accordance with the requirements of clause 3(11) or 3(12) of Part I of the Performance Standard for Lifeboats.

(4) If partially enclosed lifeboats are carried, a davit span shall be provided, fitted with not less than 2 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.

9. Strength—(1) Every davit serving a lifeboat which is required by the Shipping (Lifesaving Appliances) Regulations 1989 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 clause 1(2) of Part I of this performance standard.

(2) Every davit serving a lifeboat which is required by the Shipping (Lifesaving Appliances) Regulations 1989 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 2 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) 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 2 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.

(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, 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.

10. Gravity Davits—(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 clause 1(2) of Part I of this performance standard. 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.

11. Luffing Davits— 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:

(a) the total number of persons they are certified to carry when installed on cargo ships; or

(b) a launching crew of not less than 2 persons when installed on passenger ships and when boarded at an embarkation deck can be turned out against a list of at least 20°.

12. Stresses— 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 bowing tackle and tricing pendants where required and a minimum factor of safety of 6 shall be applied to falls, suspension chains, links and blocks.

13. Static Load Test— 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 clause 1(2) of Part I of this performance standard and 10° trim, of not less than 2.2 times that part of the working load supported by the arm, or attachment.

14. Attachments at the Davit Head— 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.

15. Blocks— 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.

(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.

16. Wire Ropes—(1) Falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

(2) The breaking tensile load of each wire rope used for lowering lifeboats or rescue boats shall be not less than 6 times the maximum load on the wire rope when lowering, hoisting or stowing.

(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.

(4) Where wire ropes splices of 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.

(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 seagoing draught under unfavourable conditions of trim and listed to 20° either way. Disengaging gear complying with the requirements of Part VII of the Performance Standard for Lifeboats or Part IV of the Performance Standard for Rescue

Boats shall be provided for detaching the lifeboat or rescue boat from the falls.

17. Winches—(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 5° for grooved drums and 3° 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.

(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:

(a) a static test with a proof load of not less than 1.5 times the maximum working load; and

(b) a dynamic test with a proof load of not less than 1.1 times the maximum working load at maximum lowering speed.

(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 percent of the speed required above.

(4) Notwithstanding the requirements of sub-clause (3) of this clause the speed of lowering shall not exceed 1.3 metres per second.

(5) The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in sub-clauses (3) and (4) of this clause. A ratchet gear shall be incorporated in these winches.

(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.

(7) The launching mechanism shall be so arranged that it may be actuated by 1 person from a position on the ship's deck. It should also be operable by 1 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.

(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:

(a) 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;

(b) the winch brake shall be operable from within the boat;

(c) the winch brake shall not be affected by the mass of the fully extended control wire, nor the wind effects on it;

(d) there shall be sufficient length of control wire available at the boat during all stages of lowering; and

(e) 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

Liferaft Launching Appliances

18. Definition of "Working Load"—In this Part the expression "working load" means 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.

19. Construction—(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) 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.

(3) The arrangements of the launching appliance shall be such as to enable safe boarding of the liferaft in accordance with the requirements of clauses 6(3) or 6(4) of Part I of the Performance Standard for Liferafts.

20. Strength—(1) Every launching appliance serving a liferaft which is required by the Shipping (Lifesaving Appliances) Regulations 1989 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 clause 1(2) of Part I of this performance standard.

21. Stresses—(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.

22. Static Load Test—(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 clause 1(2) of Part I of this performance standard, of not less than 2.2 times the maximum working load.

23. Wires Ropes—(1) Falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

(2) The breaking tensile load of each wire rope used for lowering shall be not less than 6 times the maximum load on the wire rope when lowering, hoisting or stowing.

(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.

(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.

(5) The falls of a liferaft launching appliance shall be at least long enough to reach the water with the ship at its lightest seagoing draught under unfavourable conditions of trim and listed to 20° either way.

24. Winches—(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:

(a) a static load test with a proof load of not less than 1.5 times the maximum working load; and

(b) a dynamic test with a proof load of not less than 1.1 times the maximum working load at the maximum lowering speed.

(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.

(3) Notwithstanding the requirements of sub-clause (2) of this clause the speed of lowering shall not exceed 1 metre per second.

(4) The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in sub-clauses (2) and (3) of this clause. A ratchet gear shall be incorporated in these winches.

(5) Hand gear handles shall not be rotated by moving parts of the winch when the liferaft is being lowered or hoisted by power.

(6) The launching mechanism shall be so arranged that it may be actuated by 1 person from a position on the ship's deck. It shall also be operable by 1 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) 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:

(a) the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire;

(b) the winch brake shall be operable from within the liferaft;

(c) the winch brake shall not be affected by the mass of the fully extended control wire nor the wind effects on it; and

(d) there shall be sufficient length of control wire available at the liferaft during all stages of lowering.

25. Release of the Liferaft—(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 the Performance Standard for Liferafts.

Part IV

Inflated Boat Launching Appliances

26. Definitions— In this Part the expression "working load" means the sum of the masses of:

(a) the inflated boat and its full equipment;

(b) the blocks and falls;

(c) a launching crew of 2 persons each of mass 75kg; and

(d) a mass of 60kg or the mass of the engine together with

its fuel tank and sufficient fuel for 2 hours operation, whichever is the greater.

(2) In this Part the expression "inflated boat" means any inflated boat or rigid inflated boat other than a dedicated rescue boat.

27. Construction—(1) Every inflated boat launching appliance shall be so constructed to be:

(a) capable of recovering the inflated boat and bringing it on board the ship;

(b) 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

(c) provided with a suitable means for manual operation.

(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.

(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 clauses 26(c) and 26(d) of this Part and with its full equipment.

28. Strength— Every launching appliance servicing 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 safely lowered into the water from the embarkation position with a complement of 2 persons, when the ship has a list of up to 20° either way and a trim of up to 10°, or such angles as may be required by clause 1(2) of Part I of this performance standard.

29. Stresses—(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.

30. Static Load Test—(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 clause 1(2) of Part I of this performance standard of not less than 2.2 times the maximum working load.

31. Winches—(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.

(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:

(a) a static load test with a proof load of not less than 1.5 times the maximum working load; and

(b) a dynamic test with a proof load of not less than 1.1 times the maximum working load at the maximum lowering speed.

(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.

(4) Notwithstanding the requirements of sub-clause (3) of this clause the speed of lowering shall not exceed 1.3 metres per second.

(5) The brake gear of the winch shall include means for automatically controlling the speed of lowering to within the limits specified in sub-clauses (3) and (4) of this clause. A ratchet gear shall be incorporated in the winch.

(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.

(7) The launching mechanism shall be so arranged that it may be actuated by 1 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.

32. Wire Rope Falls—(1) Wire rope-falls shall be of rotation-resistant and corrosion-resistant steel wire rope.

(2) The breaking tensile load of each wire rope used for lowering shall be not less than 6 times the maximum load on the wire rope when lowering, hoisting or stowing.

(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.

(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.

(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.

33. Cordage Rope Falls—(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.

(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.

34. Bollards—(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.

Part V

Embarkation Ladders

35. Construction—(1) The steps of the embarkation ladder shall be:

- (a) 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;
- (b) provided with an efficient non-slip surface either by

longitudinal grooving or by the application of an approved non-slip coating;

(c) not less than 480mm long, 115mm wide and 25mm in depth, excluding any non-slip surface or coating;

(d) equally spaced not less than 300mm or more than 380mm apart and secured in such a manner that they will remain horizontal.

(2) The side ropes of the embarkation ladder shall consist of 2 uncovered manila ropes not less than 65mm 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.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU2

The Shipping (Emergency Position-Indicating Radio Beacons) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Emergency Position-Indicating Radio Beacons) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Emergency Position-Indicating Radio Beacons

Part I

Emergency Position-Indicating Radio beacons (Solos) for Use on Any Ship

1. Introduction—(1) This performance standard sets out the minimum requirements for maritime Emergency Position-Indicating Radio Beacons (EPIRBs).

(2) EPIRBs are defined as stations in the mobile service, the emission of which are intended to facilitate search and rescue operations.

(3) The EPIRBs described in this specification are intended only for transmission of radio signals on 121.5 MHz and 243 MHz for alerting by and locating vessels or their survival craft in distress.

2. Construction—(1) The EPIRB shall primarily be designed to operate when floating in the sea, but shall also operate satisfactorily on a ship's deck or in a survival craft.

(2) In all respects the mechanical and electrical design, construction and finish of the equipment shall conform with good engineering practice.

(3) The equipment shall be designed to minimise the risk of internal and external damage during use or stowage.

(4) The exterior of the equipment shall have no sharp edges or projections which could easily damage inflatable rafts or injure personnel.

(5) The general construction and method of operation shall provide a high degree of proof against inadvertent operation due to magnetic influences, handling, stowage and transit

whilst still providing a simple means of operating in an emergency.

(6) The equipment shall be portable, lightweight and compact and be designed as one integral unit. The EPIRB shall derive its energy from a battery forming a part of the equipment and incorporate a permanently attached antenna which may be either of fixed length or extendable.

(7) The EPIRB shall be fitted with a testing facility by which the functioning of the transmitter and battery can be easily tested without the use of any external equipment.

(8) The equipment shall be capable of being used by an unskilled person and only be capable of manual activation and deactivation.

(9) The equipment shall withstand being dropped into water from a height of 20 metres without damage.

(10) The EPIRB shall be watertight, buoyant, self-righting and sufficiently stable to maintain the antenna substantially vertical under heavy swell conditions.

(11) The equipment shall be provided with an indication that signals are being emitted. The indication shall be either audible or visual indications clearly discernible under all ambient conditions.

(12) The EPIRB shall be provided with a firmly attached line in order that the equipment may be tethered in use. The line shall have a length of at least 20 metres and be capable of floating in sea water.

(13) A substantial part of the equipment shall be of highly visible yellow or orange colour to assist visual location.

(14) The equipment shall not be unduly affected by sea water or oil and shall be resistant to deterioration by prolonged exposure to sunlight.

3. Controls—(1) The equipment shall be initially activated by the use of two simple, but independent mechanical actions, neither of which on its own shall activate the equipment.

The equipment shall not be capable of automatic activation.

Initial activation shall break a seal which shall not be replaceable by the user. This seal shall not be broken when using the test facility.

(2) After activation, it shall be simple to de-activate the equipment.

(3) The switch which operates the test facility required by clause 2(7) of this Part shall be so designed that it automatically returns to the off-position when released.

4. Labelling—(1) The equipment shall be provided with a label, or labels, permanently affixed to the exterior of the equipment, containing the following information:

(a) Type designation of the equipment.

(b) Adequate instructions to enable the equipment to be activated and de-activated.

(c) The type of battery as specified by the manufacturer of the EPIRB.

(d) A warning to the effect that the EPIRB should not be operated except in an emergency.

(e) The date on which the battery is to be replaced. Simple means shall be provided for changing this date when the battery is replaced.

(f) Space on which the name and the call sign of the ship can be recorded.

5. Operating instructions— The EPIRB manufacturer shall provide all instructions and information regarding stowage, installation and operating of the EPIRB to ensure proper operation and to avoid false alarm.

6. Power source—(1) The battery provided as a source of power shall have sufficient capacity to operate the equipment

for an uninterrupted period of at least 48 hours under all temperature conditions within the requirements of clause 15(1) of Part II of this performance standard.

(2) The battery shall have a shelf life of at least 3 years and when fitted to the equipment shall not require replacement within 2 years. The type of battery specified by the manufacturer for use in the equipment, shall be clearly stated on the equipment.

(3) The battery shall be clearly and durably marked with the expiry date.

(4) Provisions shall be made for protecting the equipment from damage due to accidental reversal of polarity of the battery.

Part II

Test Procedures for EPIRBs (Solos) for Use on Any Ship

7. General—(1) The following test procedures are considered satisfactory for determining required performance under standard and stressed environmental conditions. Although specific test procedures are cited, it is recognised that other methods may be preferred. These alternative procedures may be used if they provide at least equivalent information.

(2) EPIRB testing should be conducted so as to avoid outside radiation on 121.5 MHz and 243 MHz. A screened room or metal enclosure should be used when testing on the operational frequencies.

(3) For bench or ground tests conducted outside of a screened enclosure, offset crystals should be used for operation on 122.0 MHz and 244 MHz.

(4) In all cases EPIRB testing should be coordinated with the Head Office of the Maritime Transport Division of the Ministry of Transport.

8. Test facilities—(1) Any test facility provided to indicate proper operation of the equipment shall not produce a field strength of greater than 25 microvolts per metre, whether the antenna is extended or not, measured at a distance of 50 metres from the beacon in any direction.

(2) In the absence of an integral test facility, the equipment shall not be tested in such a manner that a false distress alarm may result.

9. Test fixture—(1) If the equipment is not fitted with a 50 ohm output, the manufacturer shall supply a test fixture permitting relative measurements to be made on the submitted sample. This test fixture shall provide a 50 ohm radio frequency terminal at the working frequencies of the equipment.

(2) The performance characteristics of the test fixture under normal and extreme conditions shall be subjected to the approval of the testing authority. The following characteristics shall apply:

(a) the coupling loss shall be as low as possible and in no case greater than 30 dB;

(b) the variation of coupling loss with frequency shall not cause errors in the measurements exceeding 2 dB;

(c) The coupling device shall not incorporate any non-linear elements;

(d) the power consumption of the EPIRB shall not substantially change when fitted in the test fixture.

(3) Any connections provided on the equipment in order to facilitate relative measurements shall not affect the performance of the equipment either in the test fixture or

when making measurements involving the use of radiated fields.

10. Artificial antenna— Where stated, the tests shall be carried out using a 50 ohms non-reactive, non-radiating load or the test fixture described in clause 9 of this Part.

11. Normal and extreme test conditions— Type approval tests shall be carried out under normal and extreme test conditions, unless otherwise stated.

12. Test power source—(1) Where stated, the battery of the equipment shall be replaced by a test power source capable of producing normal and extreme test voltages as specified in clauses 14 and 15(2) of this Part.

(2) For type approval tests, three sets of batteries shall be submitted.

13. Normal test conditions—Normal temperature and humidity conditions for tests shall be any convenient combination of temperature and humidity within the following ranges:

Temperature: +15°C to +35°C

Relative Humidity: 20% to 75%

14. Normal test voltage—The normal test voltage shall be determined in each case, and shall be the voltage corresponding to the voltage that the battery gives under normal temperature and humidity at a load equal to that of the equipment.

15. Extreme test conditions—(1) Extreme temperatures

For tests at extreme temperatures, measurements shall be made in accordance with the procedure specified in clause 16 of this Part at the lower and upper temperature of -20°C and +55°C.

(2) Extreme test voltages

(a) The upper extreme test voltage shall be determined in each case, and shall be the voltage corresponding to the voltage that the battery gives at the upper extreme temperature with a load equal to that of the equipment.

(b) The lower extreme test voltage shall be determined in each case and shall be the voltage corresponding to the voltage that the battery gives under the extreme lower temperature with a load equal to that of the equipment, after 48 hours of operation.

16. Procedure for tests at extreme temperatures—(1) The equipment shall be switched off during the temperature stabilisation period.

(2) Before tests are carried out, the equipment shall have obtained thermal balance in the test chamber, and have been switched on for a period of 5 minutes.

17. Environmental tests—(1) Before environmental tests are commenced, a test of the equipment to the other requirements of this Schedule shall be carried out. Where electrical tests are required, these shall be done with the normal test voltage.

(2) The term performance check as used in this performance standard shall be taken to mean a check of the output power, frequencies and modulation of the equipment.

(3) The following tests shall be made under environmental conditions as detailed in Annex VI to Recommendation T/R 34-01,

“Environmental Testing of Maritime Radio Equipment”:
published by the Conference of European Postal and
Telecommunications Administrations (CEPT).

(a) Vibration, Paragraph 4

(b) Dry Heat Cycle, Paragraph 5.1

(c) Damp Heat Cycle, Paragraph 6

(d) Low Temperature Cycle, Paragraph 7.1 with the exception that the lower temperature shall be -40°C

(e) Corrosion Tests, Paragraphs 10.1 & 10.2

(4) The equipment shall be placed in an atmosphere of +70°C for one hour. It shall then be immersed in water at +20°C to a depth of 10cm, measured from the highest point of the equipment to the surface of the water, excluding the antenna when extended, for a period of one hour.

(5) The equipment shall be subjected to an external water pressure of 100 kPa for 5 minutes.

(6) The equipment shall be dropped three times into water, with the antenna extended if applicable, from a height of 20 metres.

(7) On completion of the tests in sub-clauses (3), (4), (5) and (6) of this clause, the equipment shall not show any signs of external significant damage or harmful penetration of water and shall meet the requirements of this Schedule.

18. Frequencies—(1) When activated, the EPIRB shall continuously and simultaneously transmit on the frequencies 121.5 MHz and 243 MHz.

(2) The frequency error is the difference between the measured carrier frequency and its nominal value.

(3) The carrier frequency shall be measured with the equipment placed in the test fixture or connected to the artificial antenna. The measurement shall be made using the test power source described in clause 12.

(4) The frequency error, both under normal and extreme test conditions or at any intermediate condition, shall not exceed ± 3.5 kHz for the frequency 121.5 MHz and ± 7.0 kHz for the frequency 243 MHz.

19. Class of emission—(1) The radio frequency transmission shall be amplitude modulated with full carrier and both sidebands (A3X).

The emission shall consist of a signal obtained by amplitude modulation of the carrier frequencies with downward audio-frequency sweep within a range of not less than 700 Hz between 1600 Hz and 300 Hz and with a sweep repetition rate of 2 to 4 times per second.

(2) The signal may include information of the identity of the ship. If included, this information should be transmitted automatically, and should not occupy a substantial part of the transmission time.

20. Modulation characteristics—(1) The depth of modulation is the ratio:

$$\frac{A - B}{A + B}$$

A and B are respectively the maximum and minimum values of the envelope curve.

(2) Modulation duty cycle is the ratio of the positive modulation peak duration to the period of the instantaneous fundamental audio modulating frequency, observed at the half-amplitude points on the modulation envelope.

(3) The depth of modulation and the modulation duty-cycle shall be measured with an oscilloscope, with the EPIRB placed in the test fixture or connected to the artificial antenna.

(a) The depth of modulation shall be at least 85%

(b) The duty-cycle shall be between 50% and 70%.

21. Radiation characteristics—(1) The radiation from the antenna shall be vertically polarised.

(2) The radiation shall be substantially omnidirectional in the horizontal plane.

(3) The radiation from the equipment floating in water, shall predominate at small angles of elevation.

(4) The conditions specified in subclauses (1), (2), and (3) of this clause may be satisfied with a vertical ship antenna having an electrical length of between one quarter and five eighths of the wavelength at the operating frequencies.

22. Radiated peak envelope power—(1) The peak envelope power is the average power during one radio frequency cycle

at the crest of the modulation envelope. The radiated peak envelope power is the peak envelope power required at the input of a quarter wave monopole antenna normal to an horizontal earth plane to produce, at the same distance, in an horizontal direction, the same field strength as produced by the equipment under specified conditions.

(2) The radiated peak envelope power shall be measured by means of a substitution method.

(a) The measurement shall be performed with the equipment floating in salt water in its ordinary operating position, in order to simulate the radio frequency properties of the sea. The salt water should be contained in a water tank of at least 1 metre diameter or in a smaller tank with an additional earth plane of at least 1 metre diameter.

(b) The radiated signal shall be measured at a distance of at least 10 metres from the antenna of the EPIRB. It shall be possible to vary the measuring antenna's height above the ground by at least one half wavelength, and the strength of the received signal shall be registered by means of a peak reading indicator.

(c) The measuring receiver shall have a bandwidth of 10kHz.

(d) The height of the measuring antenna shall be varied until maximum signal strength is found.

(e) The EPIRB shall be rotated in the horizontal plane until a minimum reading on the peak reading indicator is found.

(f) The EPIRB shall then be replaced by a substitution antenna which shall be a quarter wave monopole antenna mounted on an earth plane and connected to an unmodulated signal source. The height of the measuring antenna shall be varied until the maximum signal strength is registered. The level of the signal source shall be adjusted to give the same reading of the peak reading indicator as from the EPIRB. The average output power from the signal source is designated as the radiated peak envelope power of the EPIRB. Allowance shall be made for cable attenuation.

(g) The EPIRB connected to the artificial antenna or placed in the test fixture shall then be placed in a climatic chamber, and relative radio frequency output power tests under extreme temperature conditions shall be performed. The battery shall be changed for each test.

(3) The radiated peak envelope power shall for all temperature conditions be at least 200mW both frequencies during and at the end of 48 hours continuous operation.

23. Radiation produced by operation of the test facility—

(1) Radiation produced by operation of the test facility is the radiation at the nominal frequencies when the equipment is being tested.

(2) The EPIRB shall be hand-held with the switch in the test position.

(a) The method of measurement described in clause 22(2) of this Part shall be used, however, the test shall be performed at normal test temperature only.

(b) The transmitter shall be turned in all directions until the maximum radiation is found.

(3) The test facility provided to indicate the correct functioning of the EPIRB shall not produce a peak effective radiated power on each carrier frequency greater than 25 nW.

24. Spurious emission—(1) Spurious emission is emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

(2) Spurious emissions shall be measured on the test site described in clause 22 (2) (a) of this Part.

(3) The measurement shall be performed with the EPIRB immersed in salt water in its normal operating position.

(4) The method of measurement described in clause 22 (2) of this Part shall be used to search for spurious emissions in the frequency bands 108–137 MHz, 156–162 MHz, 406.0–406.1 MHz and 450 —470 MHz.

(5) The measuring receiver shall have a bandwidth of 10 kHz.

(6) The measurement shall only be performed at normal temperature conditions.

(7) The power of any spurious emission component shall not exceed 25 uW on any frequency.

25. Protection of the transmitter—(1) The EPIRB transmitter, when operating, shall not be damaged due to antenna mismatching.

(2) Where appropriate the antenna shall be detached for a period of 5 minutes.

(3) Where appropriate the antenna feed point shall be short circuited for a period of 5 minutes.

(4) Equipment with a non-detachable antenna shall be completely immersed in salt water for a period of 5 minutes with the antenna extended.

(5) The equipment shall operate normally upon completion of tests.

Part III

Emergency Position-Indicating Radio Beacons for Use on Ships Other Than Ships of Classes I, VII and VIII

26. Introduction—(1) This Part of the Schedule sets out the general design and minimum performance requirements for an Emergency Position-Indicating Radio Beacon (EPIRB) operating on 121.5 MHz and 243 MHz, intended for carriage on ships other than ships of Classes I, VII and VIII.

27. Type approval and licensing—(1) The equipment must be type approved by the Ministry of Transport and bear a label showing the type approval number.

(2) The requirements of this Part of the Schedule do not cover equipment intended for compulsory carriage in aircraft which is subject to Civil Aviation Airworthiness Requirements.

(3) Requests for further information and applications for type approval testing can be made to:

The General Manager,
Maritime Transport Division,
Ministry of Transport
PO Box 27–006
WELLINGTON

28. General requirements—(1) In all respects the mechanical and electrical design and construction of the equipment shall conform to good engineering practice. The equipment shall be designed as one integral unit suitable for maritime use.

(2) The exterior of the equipment shall have no sharp edges or projections which could damage inflatable survival equipment, injure personnel or damage their clothing. Controls should be protected to minimise inadvertent activation or deactivation of the EPIRB. The case should be of a conspicuous colour such as safety yellow or international orange.

(3) The equipment shall be constructed such that it can withstand reasonable impact, shock, crush, and vibration forces and will continue to operate properly in accordance with the requirements of this specification.

(4) The equipment, exclusive of water-activated batteries, shall be waterproof. The effects of standing water on the outer surface of the equipment shall have no significant adverse effect upon the performance of the equipment.

(5) The equipment's performance shall not be adversely

affected after the equipment has been totally immersed in salt water.

(6) The equipment shall be buoyant and, when floating in fresh water or salt water, shall be self-righting and sufficiently stable to maintain the antenna substantially in its normal operating position. Any flotation collar fitted shall be permanently attached. Buoyancy shall not depend upon inflation.

(7) A strong flexible cord shall be provided as a means of tethering the equipment. The line is to be attached permanently to the equipment in such a manner that it will not adversely affect any of the requirements of this Part.

29. Controls—(1) There shall be a positive means of switching the equipment on and off, it shall be unambiguous in operation and clearly labelled. The switch shall be designed to preclude accidental activation by physical shock or other causes. After activation the equipment shall operate automatically.

(2) The equipment shall be capable of being set in operation by unskilled persons, and a set of concise operating instructions in the English language shall be permanently affixed to the casing of the equipment.

In addition the following warning shall be displayed:

“For marine distress use only. Unauthorised operation is prohibited.”

Displays shall be weather resistant, waterproof and abrasion resistant.

(3) The equipment shall be designed so that it may be deployed, its controls actuated, or the antenna erected each by a single action task which can be performed by either hand.

(4) The equipment shall be fitted with a device to indicate that the beacon is transmitting once it has been activated.

30. Antenna—(1) If the antenna is not designed to be stowed in its normal operating position, it shall be deployable to the designed length and operating position in a foolproof manner. If this antenna or its sections can be taken apart and detached from the equipment, they shall be secured against loss.

(2) The antenna shall provide optimum performance at 121.5 MHz and 243.0 MHz. Radiation shall be vertically polarised and essentially omnidirectional in the horizontal plane.

31. Power supply—(1) The battery shall be capable of supplying all the electrical energy requirements of the equipment to meet the minimum performance requirements of this Part. The equipment shall be protected against reversed polarity or incorrect installation of the battery.

(2) If an unintentional gas or liquid seepage can be emitted from the power supply, the internal components of the equipment shall not be adversely affected to the extent that the minimum performance standards specified herein cannot be met.

(3) The battery shelf life shall be specified by the equipment manufacturer and shall not be less than 12 months. The expiry date shall be clearly and conspicuously marked on an external label.

32. Transmitter—(1) The transmitter shall operate simultaneously on 121.5 MHz and 243.0 MHz. The carrier frequencies shall remain within $\pm 0.005\%$ under all environmental operating conditions.

(2) Manufacturers shall endeavour to limit all spurious radiations to a level 30 dB below the output of the carrier frequencies of operation.

(3) The type of emission shall be A3X and shall have a distinctive audio characteristic achieved by amplitude modulating the carrier with an audio frequency sweeping downward over a range of not less than 700 Hz, within the range 1600 Hz to 300 Hz and with a sweep repetition rate of between 2 and 4 Hz.

(4) The modulation factor shall be at least 0.85.

(5) The carrier frequency duty cycle shall be at least 33%.

(6) The transmission shall not be interrupted.

(7) The radiated peak envelope power shall be not less than 100mW (+20 dBm) on each frequency throughout a 50 hour period.

(8) The transmitter shall attain a radiated peak envelope power level of 100 mW at each carrier frequency within five minutes of the EPIRB being activated.

(9) For a manually activated EPIRB the performance requirements of this Part shall be met over the temperature range 0°C to +55°C. For an EPIRB which is water activated the operating temperature range is 0°C to +40°C.

33. Test facilities—(1) Any test facility provided to indicate proper operation of the equipment shall not produce a field strength of greater than 25 microvolts per metre, whether the antenna is extended or not, measured at a distance of 50 metres from the beacon in any direction.

(2) In the absence of an integral test facility, the equipment shall not be tested in such manner that a false distress alarm may result.

34. Test procedures—(1) General

(a) The following test procedures are considered satisfactory for determining required performance under standard and stressed environmental conditions. Although specific test procedures are cited, it is recognised that other methods may be preferred. These alternative procedures may be used if they provide at least equivalent information.

(b) EPIRB testing should be conducted so as to avoid outside radiation on 121.5 MHz and 243 MHz. A screened room or metal enclosure should be used when testing on the operational frequencies.

(c) For bench or ground tests conducted outside of a screened enclosure offset crystals should be used for operation on 122.0 MHz and 244 MHz.

(d) In all cases, EPIRB testing should be co-ordinated with the Head Office of the Maritime Transport Division of the Ministry of Transport.

(2) Definitions of terms and conditions of test

The following definitions of terms and conditions of test are applicable to the test procedures specified in this subsection.

(a) Power input voltage

Unless otherwise specified, all tests shall be conducted with the EPIRB using its self-contained battery source connected in the normal mode of operation.

(b) Adjustment of equipment

The circuits of the equipment under test shall be properly aligned and otherwise adjusted in accordance with the manufacturer's recommended practices, prior to the application of the specified tests. No adjustments shall be performed on the EPIRB after initiation of the tests.

(c) Test instrument precautions

Due precautions shall be taken during the conduct of the tests to prevent the introduction of errors resulting from the improper connection or adjustment of test instruments across the input and output impedances of the equipment under test.

(d) Ambient conditions

Unless otherwise specified, all tests shall be conducted under conditions of ambient room temperature, pressure and humidity. However, the room temperature shall not be lower than 10°C.

(e) Warm up period

Unless otherwise specified, all tests shall be conducted after an equipment warm-up period of not less than fifteen minutes.

(f) Modulation factor

The modulation factor shall be defined with respect to the

maximum and minimum amplitudes of the modulation envelope by the following formula:

Modulation Factor =

$$\frac{V_{\text{PEAK}} - V_{\text{TROUGH}}}{V_{\text{PEAK}} + V_{\text{TROUGH}}}$$

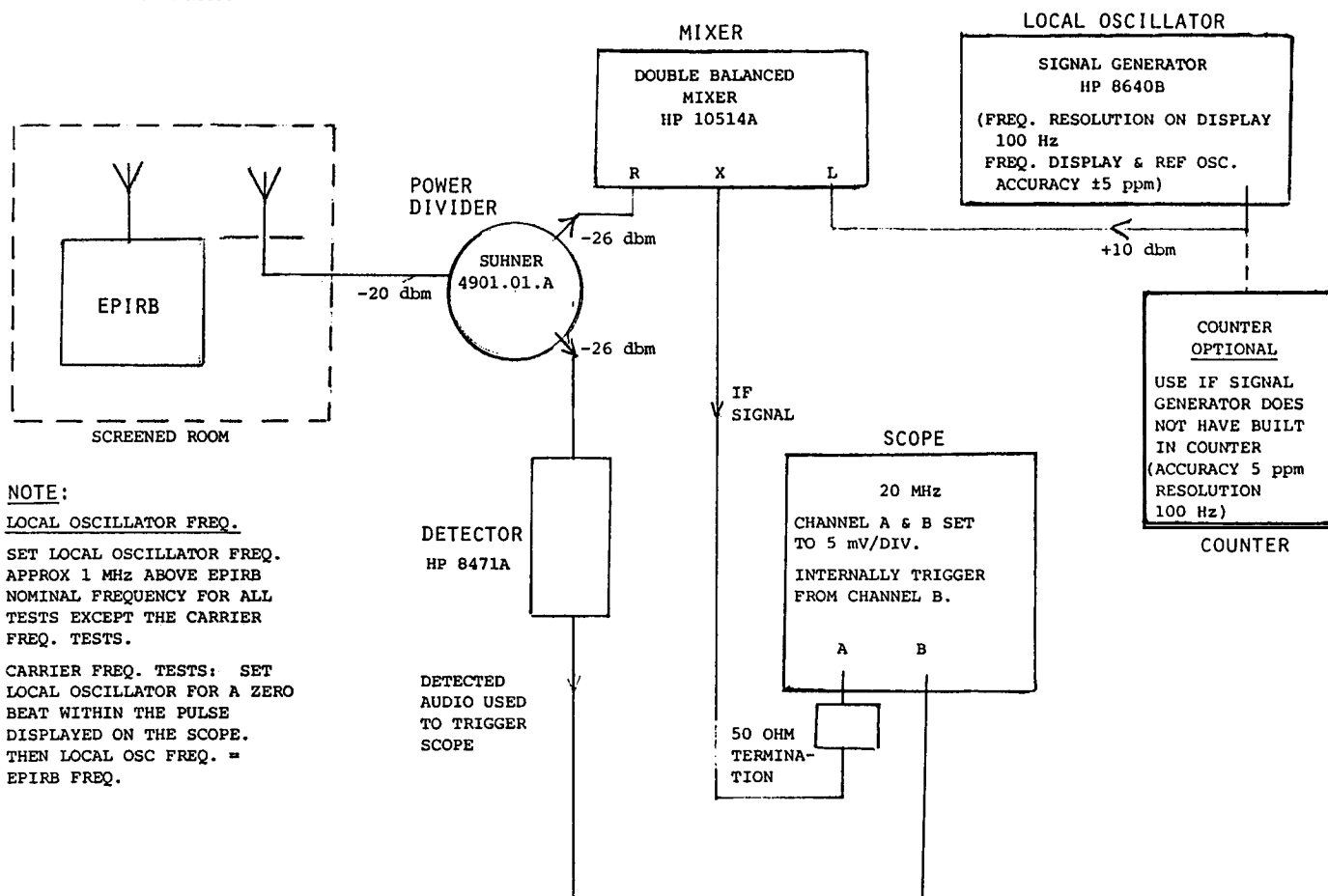


FIG 1 CARRIER FREQUENCY AND MODULATION PERFORMANCE - TYPICAL TEST SET UP.

(3) Measurement procedure : Frequency and modulation

(a) Operating frequencies (clause 32 (1) and (2))

Connect the equipment as shown in Figure 1. Operate the equipment using its own power supply. Measure the frequencies of the carrier emissions, with an accuracy of at least five parts per million. Frequency measurements shall be recorded at one minute intervals over a period of five minutes.

(b) Modulation characteristics (clause 32 (3) and (4))

Operate the equipment as in sub-clause (3) (a) of this clause. Observe the modulation envelope on the oscilloscope and determine the upper and lower audio frequency sweep limits, sweep rate and modulation factor.

(c) Transmitter duty cycle (clause 32 (6))

Operate the equipment as in sub-clause (3) (a) of this clause. Observe the modulated signal and determine that the carrier is not interrupted between sweeps.

(4) Measurement procedure : Radiated peak envelope power (clause 32 (7)).

(a) Test conditions

(i) The test site should be on level ground which has uniform electrical characteristics. The site should be clear of metal objects, overhead wires, etc, and free as possible from undesired signals such as ignition noise or other RF carriers. The distance from the transmitter under test, or the field strength meter, to reflecting objects should be at least 100 metres. The EPIRB under test shall be located on the ground with a supplementary ground plane.

(ii) Measurement of radiated or received signals should be

made at a point 30 metres from the antenna. For each frequency measurement, the Field Intensity Meter should be adjusted to the correct length for the frequency involved.

(b) Method of measurement

The basic method of measuring of radiated peak envelope power is that of direct substitution as detailed below:

(i) Place the standard quarter-wave monopole antenna on a ground plane. Connect a calibrated signal generator set for the power required in clause 32 (7). Account for all losses in transmission lines and impedance mismatch at the antenna to ensure that the transmitted signal is not less than that specified in clause 32 (7).

(ii) Place the FIM antenna in a vertical position with the lower element tip at least a quarter wavelength above the ground.

(iii) Measure the field strength with the FIM in "peak position". The FIM antenna may be rotated about its centre axis for a maximum reading (vertical to horizontally polarised reception).

(iv) Replace the standard quarter-wave antenna and its calibrated source with the EPIRB.

(v) Measure the field strength with the FIM in "peak" position. The FIM antenna may again be rotated for maximum signal. The height of the FIM antenna may also be adjusted for maximum signal. The EPIRB under test should be rotated to obtain field strength measurements at least every 60 degrees of azimuth. The pattern should be essentially omnidirectional in the horizontal plane. The pattern deviation shall not be greater than 6 dB from the reference signal at any selected point. The

average of the field strength readings shall be equal to, or greater than, the standard.

(vi) Repeat (i) through to (v) above for each of the two radiated frequencies involved.

(5) Temperature tests—general

All temperature settings shall have a tolerance of $\pm 3^{\circ}\text{C}$. Temperature stabilisation means the equipment shall have been exposed to the appropriate temperature for at least 30 minutes. Battery replacement is permitted prior to initiation of the low temperature and high temperature tests.

(6) Low temperature tests

(a) Before this test, the EPIRB shall be subjected to the tests specified in sub-clause (8) of this clause.

(b) The EPIRB shall be placed in the "OFF" mode then stabilised at -10°C . Following temperature stabilisation of the EPIRB, the chamber temperature shall be increased to 0°C and again stabilised.

(c) The EPIRB should then be activated and whilst maintaining its temperature at 0°C , the transmitter output power shall be measured. Power output shall not be less than the requirement specified in clause 32 (7) at each frequency. Also, the time requirements specified in clause 32 (8) shall be met.

(d) The EPIRB under test shall be continuously operated at 0°C for the period specified in clause 32 (7).

(e) Throughout the test period, the EPIRB shall meet the minimum performance requirements as described in clauses 32 (1) to 32 (7) inclusive.

Note: This test is not intended to be a temperature shock test. The rate at which the temperature is reduced from ambient conditions is optional.

(7) High temperature test

(a) Before this test, the EPIRB shall be subjected to the tests specified in sub-clause (6) of this clause.

(b) The EPIRB shall be placed in the "OFF" mode, then stabilised at $+55^{\circ}\text{C}$.

(c) The EPIRB should then be activated and whilst maintaining its temperature at $+55^{\circ}\text{C}$ (or $+40^{\circ}\text{C}$ for a water activated EPIRB), the transmitter output power shall be measured. Output power shall not be less than the requirement specified in clause 32 (7) at each frequency. Also the time requirements specified in clause 32 (8) shall be met.

(d) The EPIRB shall be operated continuously at $+55^{\circ}\text{C}$ for a period of two hours. Throughout the test period, the EPIRB shall meet the minimum performance requirements as described in clauses 32 (1) to 32 (8) inclusive.

(8) Shock and impact resistance : Drop test method

The EPIRB shall be dropped once on each face from a height of one metre onto an unyielding concrete surface. The act of dropping shall not cause the equipment to operate. At the end of the test the EPIRB shall meet the minimum performance requirements as described in clause 32 (1) to 32 (8) inclusive.

(9) Test for sealing and immersion

The equipment shall be placed in an atmosphere of $+70^{\circ}\text{C}$ for one hour. It shall then be immersed in water at $+20^{\circ}\text{C}$ to a depth of 10cm, measured from the highest point of the equipment to the surface of the water (excluding the antenna, when extended) for a period of one hour. After removal from the water, the equipment shall meet the minimum performance requirements as described in clauses 32(1) to 32(8) inclusive.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Shipping (Lifejackets) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Lifejackets) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Lifejackets

Part I

Inherently Buoyant Lifejackets for Use on Any Ship

1. Application—Inherently buoyant lifejackets for persons weighing 32kg or over shall comply with the requirements of this Part.

2. Construction—(1) An inherently buoyant lifejacket shall be constructed with proper workmanship and materials.

(2) An inherently buoyant lifejacket shall be so constructed that:

(a) after demonstration, a person can correctly don it within a period of 1 minute without assistance;

(b) it is capable of being worn inside out or is clearly capable of being worn in only 1 way and, as far as is possible cannot be donned incorrectly;

(c) it is comfortable to wear;

(d) 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.

(3) It shall be so constructed that the buoyancy is not reduced by more than 5 percent after 24 hours submersion in fresh water.

(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.

(5) It shall be fitted with a lifejacket light which complies with the requirements of Part IV of this performance standard if it is intended for a ship which is required to carry lifejackets fitted with lights.

(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 Director.

(7) It shall be fitted with a ring or loop or similar device of adequate strength to facilitate rescue.

(8) Lifejackets which comply with the requirements of the Shipping Lifesaving Appliances Rules 1968 manufactured before 1 July 1991 shall be deemed to comply with this performance standard so long as they remain in good condition to the satisfaction of a Surveyor.

3. Materials—(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) Buoyancy material shall be of good quality synthetic material, or kapok.

(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.

(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.

(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.

(6) Fastening tapes shall be not less than 32mm 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.

4. Performance—(1) An inherently buoyant lifejacket shall not be damaged in stowage throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$.

(3) It shall be capable of satisfactory operation in a seaway.

(4) It shall have sufficient buoyancy and stability in calm fresh water to:

(a) lift the mouth of an exhausted or unconscious person not less than 120mm 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;

(b) 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;

(5) An inherently buoyant lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.

(6) It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

5. Marking—(1) An inherently buoyant lifejacket shall be marked indelibly with:

(a) the manufacturer's name or trade mark and name of lifejacket, if any;

(b) the words "PERSON OF 32KG OR MORE" on both sides of the lifejacket in letters not less than 12mm 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;

(c) the words "M.O.T. APPROVED" or mark of another approving authority in letters not less than 12mm in size;

(d) the year of manufacture;

(e) the word "FRONT" on both sides of the front part of the lifejacket in letters not less than 12mm 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.

6. Lifejackets for persons weighing less than 32kg—(1)

Inherently buoyant lifejackets for persons weighing less than 32kg shall comply with the requirements of clauses 1(1) to 7(1) of this Part except that in clause 5(1)(b) 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 per cent after 24 hours submersion in fresh water.

7. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions 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.

Part II

Inflatable Lifejackets

8. Application—Inflatable lifejackets for persons weighing 32kg or over shall comply with the requirements of this Part:

9. Construction—(1) An inflatable lifejacket shall be constructed with proper workmanship and materials.

(2) An inflatable lifejacket shall be so constructed that:

(a) after demonstration, a person can correctly don it within a period of 1 minute without assistance;

(b) it is capable of being worn inside out or is clearly capable of being worn in only 1 way and, as far as is possible, cannot be donned incorrectly;

(c) it is comfortable to wear;

(d) 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.

(3) It shall be so constructed that the buoyancy is not reduced by more than 5 percent after 24 hours submersion in fresh water.

(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.

(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.

(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 Director.

(7) An inflatable lifejacket shall be constructed with not less than 2 separate compartments, and not less than 2 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.

(8) In the event of loss of buoyancy in any 1 compartment the lifejacket shall be capable of complying with the requirements of clauses 9(2), 11(4) and 11(5) of this Part.

(9) The inflatable compartments shall be so located that when inflated they do not channel water into the wearer's face.

(10) An inflatable lifejacket shall comply with the requirements of clause 9(3) of this Part after inflation by means of the automatic mechanism.

(11) It shall be fitted with a ring or loop or similar device of adequate strength to facilitate rescue.

10. Materials and Components—(1) Materials and components shall as applicable be rot-proof, corrosion resistant, and not be unduly affected by sea water, 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 or appropriate New Zealand equivalent.

(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.

11. Performance—(1) An inflatable lifejacket shall not be damaged in stowage throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate throughout a water temperature range of -1°C to $+30^{\circ}\text{C}$.

(3) It shall be capable of satisfactory operation in a seaway.

(4) It shall have sufficient buoyancy and stability in calm fresh water to:

(a) lift the mouth of an exhausted or unconscious person not less than 120mm 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;

(b) 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;

(5) An inflatable lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.

(6) It shall not sustain burning or continue melting after being totally enveloped in a fire for a period of 2 seconds.

12. Marking—(1) An inflatable lifejacket shall be marked indelibly with:

(a) the manufacturer's name or trade mark and name of lifejacket, if any;

(b) means of identification of the date of manufacture;

(c) the words "PERSON OF 32 KG OR MORE" on front in letters not less than 12mm in size;

(d) the words "M.O.T. APPROVED" or mark of another approving authority in letters not less than 12mm in size; and

(e) the word "FRONT" on both sides of the front part of the lifejacket in letters not less than 12mm in size in case of lifejackets which can be worn inside-out. In the case of lifejackets which can only be worn 1 way the marking shall be on the outside of the front part of the lifejacket.

13. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and, if appropriate, in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) description of lifejacket and attachments;

(b) donning;

(c) operation;

(d) packing;

(e) any maintenance requirements;

(f) servicing requirements;

(g) type and charged weight of gas bottles; and

(h) replacement of gas bottles.

Part III

Lifejackets for Use Only on Ships of Classes IV, V, VI and IX

14. In lieu of the lifejackets complying with the requirements of Part I of this Schedule, ships of Classes IV, V, VI and IX may carry lifejackets complying with the requirements for Coastal Lifejackets in New Zealand Standard NZS 5823.

Part IV

Lifejacket Lights

15. General—A lifejacket light shall comply with the requirements of this Part:

16. Construction—(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.

(2) The unit shall be rot-proof, corrosion-resistant and not be unduly affected by sea water, oil or fungal attack.

(3) The unit shall not have any adverse effect on the performance of the lifejacket or immersion suit to which it is attached.

(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.

(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.

(6) A flashing light shall be provided with a manually operated switch.

(7) A flashing light shall not be fitted with a lens or curved reflector to concentrate the beam.

(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.

17. Attachment—(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) The method of attachment shall be such that the light cannot become accidentally detached.

(3) The light and power source shall be capable of being removed and replaced without causing damage to the lifejacket or immersion suit.

18. Activation—(1) The light shall be easy to activate with wet, cold or gloved hands in adverse conditions and with the minimum of preparation.

19. Performance—(1) A lifejacket light shall not be damaged in stowage throughout an air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate as prescribed in subclauses (7) and (8) of this clause throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$. It shall also be capable of operating in fresh water.

(3) It shall be capable of operation in a sea way when attached to a lifejacket or immersion suit.

(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.

(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.

(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 $+30^{\circ}\text{C}$, and within 10 minutes in fresh water at ambient temperature.

(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.

(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.

(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.

(10) The unit shall be capable of withstanding a drop of 2 metres onto a rigidly mounted steel plate or concrete surface.

20. Marking—(1) The unit shall be marked indelibly with:

(a) the manufacturer's name or trade mark;

(b) the batch number or other means of identifying the unit;

(c) the words "M.O.T. APPROVED" or mark of another approving authority and

(d) clear and concise directions in English for activating the light supported by illustrations.

(2) The unit or power source as appropriate, shall be marked indelibly with the date of manufacture and expiry of the power source.

21. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and, if appropriate, in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions shall be in a form suitable for inclusion in such a 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:

- (a) method or methods of attachment to lifejackets and immersion suits;
- (b) type of power source for the particular type of light;
- (c) if the power source is replaceable, method of replacement;
- (d) type of light source and whether replaceable;
- (e) operation of light.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu3

The Shipping (Distress Flares and Line-throwing Appliances) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Distress Flares and Line-Throwing Appliances) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Distress Flares and Line-throwing Appliances

Part I

Rocket Parachute Flares

1. Construction—(1) A rocket parachute flare shall:

- (a) be constructed with proper workmanship and materials;
- (b) be contained in a water-resistant casing;
- (c) 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;
- (d) 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;
- (e) be so constructed that any sealing shall not depend on adhesive tapes, or plastic envelopes;
- (f) be so constructed that the end from which the rocket is ejected can be positively identified by day or night;
- (g) 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;

(h) 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—(1) A rocket parachute flare shall not be damaged in stowage throughout the air temperature range of -30°C to $+65^{\circ}\text{C}$.

(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:

- (a) burn with a bright red colour;
- (b) burn uniformly with an average luminous intensity of not less than 30,000 candela;
- (c) have a burning period of not less than 40 seconds;
- (d) have a rate of descent of not more than 5 metres/second.
- (e) not damage its parachute or attachments while burning.

(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—(1) A rocket parachute flare shall have brief instructions or diagrams clearly illustrating the use of the rocket parachute flare printed on its casing.

(2) The date of manufacture and the date of expiry shall be marked indelibly on the casing.

(3) The words "M.O.T APPROVED" or mark of another approving authority shall be marked indelibly on the casing.

Part II

Hand-held Flares

4. Construction—(1) A hand-held flare shall:

- (a) be constructed with proper workmanship and materials;
- (b) be contained in a water-resistant casing;
- (c) 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;
- (d) 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;
- (e) be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes;
- (f) be so constructed that the end from which the light is emitted can be positively identified by day and night;
- (g) 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;
- (h) 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.

5. Performance—(1) A hand-held flare shall not be damaged in stowage throughout the air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) A hand-held flare shall:

- (a) burn with a bright red colour;
- (b) burn uniformly with an average luminous intensity of not less than 15,000 candela;
- (c) have a burning period of not less than 1 minute;

(d) after ignition continue to burn after having been immersed for a period of 10 seconds under 100mm of water.

6. Marking—(1) A hand-held flare shall have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing.

(2) The date of manufacture and the date of expiry shall be marked indelibly on the casing.

(3) The words "M.O.T APPROVED" or mark of another approving authority shall be marked indelibly on the casing.

Part III

Buoyant Smoke Signals

7. Construction—(1) A buoyant smoke signal shall:

(a) be constructed with proper workmanship and materials;

(b) be contained in a water-resistant casing;

(c) have an integral means of ignition which can be readily operated with wet, cold or gloved hands in adverse conditions;

(d) be so designed to enable the signal to be released from a survival craft without harm to the occupants;

(e) be so designed that it shall not ignite explosively when used in accordance with the manufacturer's operating instructions;

(f) 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;

(g) be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes;

(h) 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.

8. Performance—(1) A buoyant smoke signal shall not be damaged in stowage throughout the air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) It shall be capable of satisfactory operation in a seaway.

(3) A buoyant smoke signal shall:

(a) 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;

(b) not emit any flame during the entire smoke emission time;

(c) not be swamped in a seaway;

(d) continue to emit smoke when submerged in water for a period of 10 seconds under 100mm of water.

(4) It shall be safe to operate in water covered by a low flash point liquid.

9. Marking—(1) A buoyant smoke signal shall have brief instructions or diagrams clearly illustrating the use of the smoke signal printed on its casing.

(2) The date of manufacture and the date of expiry shall be marked indelibly on the casing.

(3) The words "M.O.T APPROVED" or mark of another approving authority shall be marked indelibly on the casing.

Part IV

Line-throwing Appliances

10. Construction—(1) A line-throwing appliance shall:

(a) be constructed with proper workmanship and materials;

(b) 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;

(c) include not less than 4 projectiles;

(d) include not less than 4 lines each having a breaking strength of not less than 2 kilonewtons;

(e) be so designed that the end from which the rocket is ejected can be positively identified by day or night.

(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.

(3) Rockets, cartridges and ignitors shall be so constructed that any sealing shall not depend on adhesive tapes or plastic envelopes.

11. Performance—(1) A line-throwing appliance shall not be damaged in stowage throughout the air temperature range of -30°C to $+65^{\circ}\text{C}$.

(2) A line-throwing appliance shall be capable of throwing a line minimum of 4mm in diameter a distance of at least 230 metres in calm weather.

(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 per cent of the length of flight of the rocket in calm weather.

12. Marking—(1) A line-throwing appliance shall be marked with brief instructions or diagrams clearly illustrating the use of the appliance.

(2) The date of manufacture and the date of expiry shall be marked indelibly on the rockets, cartridges and ignitors.

(3) The words "M.O.T APPROVED" or mark of another approving authority shall be marked indelibly on the casing.

Part V

Instructions, Information and Stowage

13. Instructions and information—(1) Instructions and information for the distress flares specified in Part I to III of this performance standard and for the line-throwing appliance specified in Part IV of this performance standard and required for inclusion in the training manual specified in Part I of the Performance Standard on Training Manual and Maintenance Instructions 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:

(a) description of item;

(b) method of use including any precautions or warnings;

(c) stowage;

(d) guidance on when to use; and

(e) instructions for replacing rockets, cartridges or strikers (integral line-throwing appliance).

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU5

The Shipping (Inflated Boats) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Inflated Boats) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule**Performance Standard For Inflated Boats**

1. General—(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.

(2) All inflated boats prescribed in this performance standard shall:

- (a) be constructed with proper workmanship and materials;
- (b) not be damaged in stowage through the air temperature range -30°C to $+65^{\circ}\text{C}$;
- (c) be capable of operating throughout a seawater temperature range of -1°C to $+30^{\circ}\text{C}$;
- (d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;
- (e) be resistant to deterioration from exposure to sunlight;
- (f) be of a highly visible colour on all parts where this will assist detection;
- (g) 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 a surveyor;
- (h) be capable of satisfactory operation in a sea environment.

2. Construction—(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) 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.

(3) At least 1 portable thwart shall be fitted to enable the boat to be rowed satisfactorily.

(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.

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

(a) the number of persons having an average mass of 75kg, all wearing lifejackets, that can be seated in a normal position plus 1 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

(b) the number of spaces that can be provided on the seating arrangements in accordance with the Figure in clause 2 (5) (b) of Part I of the Performance Standard for Rescue Boats plus 1 person lying down.

(6) Each seating position shall be clearly indicated in the boat.

(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.

(8) The boat shall be so arranged that disabled persons can be brought on board either from the sea or on stretchers.

(9) All surfaces on which persons might walk shall have a non-skid finish.

(10) All inflated boats, when loaded with 50 percent 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 per cent of the boat's length or 100mm, whichever is the greater.

(11) An inflated boat shall:

(a) be not less than 3.8m and not more than 8.5m in length; and

(b) be capable of carrying at least 3 persons plus 1 person lying down.

(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 percent of its length, and shall be angled upwards to deflect water and spray.

(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 hours.

(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.

(15) The boat shall be fitted with an outboard engine having a maximum power of 7.5kW complying with the requirements of clause 3 of this performance standard.

(16) Arrangements for towing shall be permanently fitted in boats and shall be sufficiently strong to marshal or tow liferafts as required by subclause (14) of this clause.

(17) Boats shall be fitted with weathertight stowage for small items of equipment.

(18) A boat shall be constructed in such a way that, when suspended by its bridle or lifting hook;

(a) it is of sufficient strength and rigidity to enable it to be lowered and recovered with all its equipment and a crew of 2 persons;

(b) it is of sufficient strength to withstand a load of 1.1 times the mass of its equipment and a crew of 2 persons at an ambient temperature of -30°C with all relief valves operative;

(c) it is of sufficient strength to withstand a load of 4 times the mass of its equipment and a crew of 2 persons at an ambient temperature of $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ with all relief valves inoperative.

(19) Inflated boats shall be constructed as to be capable of withstanding exposure:

(a) when stowed on an open deck on a ship at sea;

(b) for 30 days afloat in all sea conditions.

(20) The buoyancy of an inflated boat shall be provided by either a single tube subdivided into at least 5 separate compartments of approximately equal volume or 2 separate tubes neither exceeding 60 percent of the total volume. The buoyancy tubes shall be so arranged that, in the event of any 1 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 75kg, and seated in their normal positions.

(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.

(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 per cent of the designed working pressure of the buoyancy chamber shall also be fitted to each buoyancy compartment.

(23) When inverted in the water an inflated boat shall be capable of being righted by not more than 2 persons.

(24) Rubbing strips shall be provided underneath the bottom and on vulnerable places on the outside of the boat.

(25) Where a transom is fitted it shall not be inset by more than 20 percent of the overall length of the inflated boat.

(26) Suitable patches shall be provided for securing painters forward and aft and becketed lifelines inside and outside the boat.

(27) The boat shall be maintained at all times in a fully inflated condition.

(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—(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.

(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) 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.

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

(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.

(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—(1) All boats shall be provided with at least 1 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.

(2) Except in the vicinity of the outboard engine, a buoyant lifeline shall be becketed around the inside and outside of the boat.

(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) A boat shall be capable of being launched by means of a launching appliance complying with the requirements of Part IV of the Performance Standard for Launching Appliances.

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

5. Lifting Arrangements—(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 4 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:

(a) the length of the legs are of equal length; or

(b) the bridle is permanently attached; or

(c) it is not possible to connect any of the bridle legs to the wrong position in the boat.

(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.

(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.

(4) The after lifting attachments shall be similar to the forward attachments or may be made directly to the transom.

(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 75kg.

(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:

(a) individually on each item associated with the lifting arrangements; or

(b) 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 6 times their respective working loads.

6. Markings—(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.

(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—(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.

(2) The equipment of every boat shall consist of:

(a) 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;

(b) a buoyant bailer;

(c) a sea-anchor complying with the requirements of Part I of the Performance Standard for Survival Craft and Rescue Boat Equipment;

(d) 1 buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by clause 2 (14);

(e) a painter 20 metres in length;

(f) 1 waterproof electric torch suitable for Morse signalling,

together with 1 spare set of batteries and 1 spare bulb in a waterproof container;

(g) 1 whistle or equivalent sound signal;

(h) a first-aid outfit in a waterproof case capable of being closed tightly after use; and complying with the requirements of Part II of the Performance Standard for Survival Craft and Rescue Boat Equipment;

(i) 2 buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

(j) thermal protective aids sufficient for 10 per cent of the number of persons the boat is permitted to accommodate or 2, whichever is the greater;

(k) a buoyant safety knife;

(l) 2 sponges;

(m) an efficient manually operated bellows or pump;

(n) a repair kit in a suitable container for repairing punctures;

(o) a safety boat hook; and

(p) a portable fire extinguisher.

8. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the boat and its equipment;

(b) installation arrangements;

(c) operational instructions including use of equipment;

(d) emergency repair instructions;

(e) deployment, boarding and launching instructions;

(f) release from launching appliance;

(g) on board maintenance requirements;

(h) servicing requirements;

(i) use of engine;

(j) recovery of boat including stowage and securing.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU7

The Shipping (Rescue Boats) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Rescue Boats) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Rescue Boats

PART 1

Rigid Rescue Boats

1. General—(1) A rigid rescue boat may be accepted as a lifeboat provided it also complies with the relevant requirements of the performance standard for Lifeboats.

(2) All rigid rescue boats prescribed in this Part shall:

(a) be constructed with proper workmanship and materials;

(b) not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout the seawater temperature range -1°C to $+30^{\circ}\text{C}$;

(d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) be of highly visible colour on all parts where this will assist detection;

(g) 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 a Surveyor of Ships;

(h) be capable of satisfactory operation in a sea environment.

2. Construction—(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) All boats shall be of sufficient strength to:

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

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

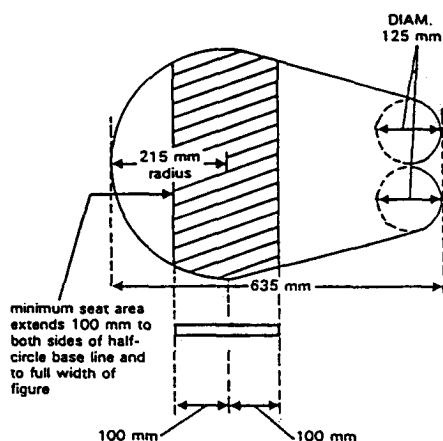
(3) Seating shall be provided on thwarts, benches or fixed chairs fitted as low as practicable in the boat and constructed so as to be capable of supporting the number of persons each weighing 100kg, for which spaces are provided in compliance with the requirements of subclause (5)(a) of this clause.

(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.

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

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

(b) the number of spaces that can be provided on the seating arrangements in accordance with the following figure plus 1 person lying down.



Figure

(6) Each seating position shall be clearly indicated in the boat.

(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.

(8) The boat shall be so arranged that disabled persons can be brought on board either from the sea or on stretchers.

(9) All surfaces on which persons might walk shall have a non-skid finish.

(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.

(11) Every boat, when loaded with 50 percent of the number of persons the boat is permitted to accommodate seated in their normal positions to 1 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 per cent of the boat's length or 100mm, whichever is the greater.

(12) All boats shall:

(a) be not less than 3.8 metres and not more than 8.5 metres in length;

(b) be capable of carrying at least 5 seated persons and a person lying down.

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

(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.

(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.

(16) The boat shall be fitted with an inboard or outboard engine complying with the relevant parts of Clause 3 of this performance standard.

(17) Arrangements for towing shall be permanently fitted in rescue boats and shall be sufficiently strong to marshal or tow liferafts as required by subclause (15) of this clause.

(18) All boats shall be fitted with weathertight stowage for small items of equipment.

(19) Hulls and rigid covers if fitted shall be fire-retardant or non-combustible.

(20) Each boat shall be of sufficient strength to withstand a load, without residual deflection on removal of that load:

(a) in the case of boats with metal hulls, 1.25 times the total mass of the boat when loaded with its full complement of persons and equipment; or

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

(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—(1) Inboard engine

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:

(a) be provided with either a manual starting system, or a power starting system with 2 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 Director 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;

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

(c) be capable of operating when the boat is flooded up to the centreline of the crank shaft.

(2) Outboard Engine

(a) 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.

(b) 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 Director 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) 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.

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

(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.

(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.

(7) The boat engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of any radio equipment used in the boat.

(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 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.

(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—(1) All boats shall be provided with at least 1 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.

(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.

(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) 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.

(5) Every boat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part IV of this performance standard.

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

(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.

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

5. Markings—(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.

(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.

6. Boat Equipment—(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.

(2) The equipment of every boat shall consist of:

(a) 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;

(b) a buoyant bailer;

(c) a binnacle containing an efficient compass complying with the requirements of Part V of the performance standard for Survival Craft Equipment and Rations which is luminous or provided with suitable means of illumination;

(d) a sea-anchor complying with the requirements of Part I of the performance standard for Survival Craft Equipment and Rations;

(e) a painter of sufficient length and strength, attached to the release device complying with the requirements of clause 4(6) of this performance standard and placed at the forward end of the boat;

(f) 1 buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by clause 2(15) of this performance standard;

(g) 1 waterproof electric torch suitable for Morse signalling, together with 1 spare set of batteries and 1 spare bulb in a waterproof container;

(h) 1 whistle or equivalent sound signal;

(i) a first-aid outfit complying with the requirements of Part II of the Performance Standard for Survival Craft Equipment and Rations in a waterproof case capable of being closed tightly after use;

(j) 2 buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0 kN;

(k) 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;

(l) an efficient radar reflector;

(m) thermal protective aids sufficient for 10 per cent of the number of persons the rescue boat is permitted to accommodate or 2, whichever is the greater;

(n) a boat hook;

(o) a bucket;

(p) a knife or hatchet;

(q) a portable fire extinguisher.

7. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the boat and its equipment;

(b) installation arrangements;

(c) operational instructions including use of associated survival equipment;

(d) survival instructions;

(e) emergency repair instructions;

(f) deployment, boarding and launching instructions;

(g) method of launching from within the boat;

(h) release from launching appliance;

(i) on board maintenance requirements;

(j) servicing requirements;

(k) use of engine and accessories;

(l) recovery of boat including stowage and securing.

8. Access into Boats—(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.

(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

Rigid Inflated Rescue Boats

9. General—(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.

(2) All rigid inflated rescue boats shall comply with all the requirements of Part I of this performance standard with the exception of clauses 1(1) and 2(10).

10. Construction—(1) The buoyancy of the boat shall be a combination of inherent and inflated buoyancy.

(2) The inflated buoyancy tube shall be single tube sub-divided into at least 5 separate compartments of approximately equal volume.

(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.

(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.

(5) Inherently buoyant material shall not be adversely affected by seawater, oil or oil products.

(6) The inflated buoyancy tubes shall comply with the requirements of clause 14 (19), 14 (21) and 14 (22) of this performance standard.

(7) The inflated buoyancy tubes shall be maintained at all times in a fully inflated condition.

11. Markings—(1) If any of the markings required by clause 5 of this performance standard are marked on the buoyancy tubes, the materials used to mark them shall be of a type which is compatible with the boat's coated fabric and approved by the boat manufacturer.

12. Equipment—(1) In addition to the equipment required by clause 6(2) of this performance standard the following items are required:

(a) an efficient manually operated bellows or pump; and

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

PART III

Inflated Rescue Boats

13. General—(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.

(2) All inflated rescue boats prescribed in this Part shall:

(a) be constructed with proper workmanship and materials;

(b) not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout a seawater temperature range of -1°C to $+30^{\circ}\text{C}$;

(d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) be of a highly visible colour on all parts where this will assist detection;

(g) 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 a Surveyor of Ships.

(h) be capable of satisfactory operation in a sea environment.

14. Construction—(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) All boats shall be of sufficient strength to:

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

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

(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 100kg for which spaces are provided in compliance with the requirements of subclause (5)(b) of this clause.

(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.

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

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

(b) the number of spaces that can be provided on the seating arrangements in accordance with the Figure in clause 2(5)(b) of this performance standard plus one person lying down.

(6) Each seating position shall be clearly indicated in the boat.

(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.

(8) The boat shall be so arranged that disabled persons can be brought on board either from the sea or on stretchers.

(9) All surfaces on which persons might walk shall have a non-skid finish.

(10) All boats, when loaded with 50 percent of the number of persons the boat is permitted to accommodate seated in their

normal positions to 1 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 per cent of the boat's length or 100mm, whichever is the greater.

(11) All boats shall:

(a) be not less than 3.8 metres and not more than 8.5 metres in length;

(b) be capable of carrying at least 5 seated persons and a person lying down.

(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 percent of its length, and shall be angled upwards to deflect water and spray.

(13) Boats shall be capable of manoeuvring at speeds of at least 6 knots and maintaining that speed for a period of at least 4 hours.

(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.

(15) The boat shall be fitted with an inboard or outboard engine complying with the relevant parts of clause 15 of this performance standard.

(16) Arrangements for towing shall be permanently fitted in boats and shall be sufficiently strong to marshal or tow liferafts as required by subclause 14 of this clause.

(17) All boats shall be fitted with weathertight stowage for small items of equipment.

(18) An inflated rescue boat shall be constructed in such a way that, when suspended by its bridle or lifting hook:

(a) it is of sufficient strength and rigidity to enable it to be lowered and recovered with its full complement of persons and equipment;

(b) 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;

(c) 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 $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ with all relief valves inoperative.

(19) Inflated rescue boats shall be so constructed as to be capable of withstanding exposure:

(a) when stowed on an open deck on a ship at sea;

(b) for 30 days afloat in all sea conditions.

(20) The buoyancy of an inflated rescue boat shall be provided by either a single tube subdivided into at least 5 separate compartments of approximately equal volume or 2 separate tubes neither exceeding 60 percent 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 75kg, and seated in their normal positions.

(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.

(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.

(23) When inverted in the water a boat shall be capable of being righted by not more than 2 persons.

(24) Rubbing strips shall be provided underneath the bottom and on vulnerable places on the outside of the inflated rescue boat.

(25) Where a transom is fitted it shall not be inset by more than 20 percent of the overall length of the inflated rescue boat.

(26) Suitable patches shall be provided for securing painters forward and aft and becketed lifelines inside and outside the boat.

(27) The inflated rescue boat shall be maintained at all times in a fully inflated condition.

(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.

15. Inflated rescue boat propulsion—(1) Inboard Engine

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:

(a) be provided with either a manual starting system, or a power starting system with 2 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 Director 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;

(b) be capable of operating for not less than 5 minutes after starting from cold with the boat out of the water;

(c) be capable of operating when the boat is flooded up to the centreline of the crank shaft.

(2) Outboard Engine

(a) Petrol-driven outboard engines with an approved fuel system may be fitted to boats provided the tanks are specially protected against fire and explosion.

(b) 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 Director 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) 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.

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

(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.

(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.

(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 lifesaving appliances used in the boat.

(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 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.

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

16. Boat Fittings—(1) All boats shall be provided with at least 1 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.

(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.

(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) 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.

(5) Every boat to be launched by a fall or falls shall be fitted with a release mechanism complying with Part IV of this performance standard.

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

(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.

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

17. Markings—(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.

(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 rescue boat shall be of a type which is compatible with the boat's coated fabric and approved by the boat manufacturer.

18. Boat Equipment—(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.

(2) The equipment of every boat shall consist of:

(a) 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;

(b) a buoyant bailer;

(c) a binnacle containing an efficient compass complying with the requirements of Part V of the Performance Standard for Survival Craft Rations and Equipment which is luminous or provided with suitable means of illumination;

(d) a sea-anchor complying with the requirements of Part 1 of the Performance Standard for Survival Craft Rations and Equipment;

(e) a painter of sufficient length and strength, attached to the release device complying with the requirements of clause 16 (6) of this performance standard and placed at the forward end of the boat;

(f) 1 buoyant line, not less than 50 metres in length, of sufficient strength to tow a liferaft as required by clause 14 (14) of this performance standard;

(g) 1 waterproof electric torch suitable for Morse signalling, together with 1 spare set of batteries and 1 spare bulb in a waterproof container;

(h) 1 whistle or equivalent sound signal;

(i) a first-aid outfit complying with the requirements of Part II of the Performance Standard for Survival Craft, Equipment and Rations in a waterproof case capable of being closed tightly after use;

(j) 2 buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0kN;

(k) 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;

(l) an efficient radar reflector;

(m) thermal protective aids sufficient for 10 per cent of the number of persons the boat is permitted to accommodate or 2, whichever is the greater,

(n) a buoyant safety knife;

(o) 2 sponges;

(p) an efficient manually operated bellows or pump;

(q) a repair kit in a suitable container for repairing punctures;

(r) a safety boat hook;

(s) a portable fire extinguisher.

19. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the Instructions

for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

- (a) general description of the boat and its equipment;
- (b) installation arrangements;
- (c) operational instructions including use of associated survival equipment;
- (d) survival instructions;
- (e) emergency repair instructions;
- (f) deployment, boarding and launching instructions;
- (g) method of launching from within the boat;
- (h) release from launching appliance;
- (i) on board maintenance requirements;
- (j) servicing requirements;
- (k) use of engine and accessories;
- (l) recovery of boat including stowage and securing.

20. Access into boats—(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.

(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

Rescue Boat Disengaging Gears

21. (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 coxswain's position.

(3) The gear shall have 2 release capabilities;

(a) 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);

(b) 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:

(a) be arranged and led so as to ensure the efficient operation of the gear;

(b) wherever necessary be properly cased in for the safety or efficient action of the gear or for the protection of persons from injury; and

(c) 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.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.
o1

The Shipping (Survival Craft Equipment) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Survival Craft Equipment) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Survival Craft Equipment

Part I—Sea Anchors

1. Interpretation—In this performance standard unless the context otherwise requires:

“Approved” means approved in writing by the Chief Surveyor, other terms have the same meanings as defined in the Shipping and Seamen Act 1952 and the Shipping (Lifesaving Appliances) Regulations 1989.

2. Shape and dimensions—(1) A sea anchor shall be conical in shape and have the following dimensions:

Sea Anchor

Craft	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 6m in length	600	780	780
Lifeboats and rescue boats over 6m in length and up to 9m in length	700	920	920
Lifeboats over 9m in length	800	1050	1050

3. Material—(1) 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).

4. Painter line—(1) The painter line used to secure the sea anchor to a liferaft or boat shall:

(a) be inherently rot proof and of braided construction;

(b) be 30 metres long; not less than 8mm in diameter and have a breaking load including attachments and knots of not less than:

(i) 7.5 kilonewtons for liferafts up to 10 person capacity;

(ii) 10.0 kilonewtons for liferafts of 11 person to 25 person capacity;

(iii) 10.0 kilonewtons 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.

5. Shroud lines—The shroud lines shall be designed to restrict the sea anchor from tumbling through itself.

6. Performance—(1) The sea anchor shall be stable when towed through the water at speeds up to 6 knots.

(2) The sea anchor mouth shall open immediately on deployment.

PART II

First Aid Outfit

7. General requirements—(1) The first aid outfit provided in every lifeboat, rescue boat, inflated boat or liferaft carried by the ship shall comply with the following requirements:

(a) it shall be packed in a durable, damp-proof and effectively sealed container capable of being closed tightly after use;

(b) the container shall be protected, until opened for use, with an outer waterproof seal;

(c) the container shall bear on its outside an itemised list of its contents, and their date of expiry.

8. Contents of first aid outfit—(1) The first aid outfit 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 Codes, the National Formulary, or approved New Zealand equivalent.

Article	Quantity	
(a) Triangular Bandage Calico Sterile BPC (Not less than 90 cm sides, 127 cm base)	4	
(b) Standard Dressing BPC Sterile Unmedicated Extra Large 28 cm × 17.5 cm	2	
(c) Standard Dressing BPC Sterile Unmedicated Large 20 cm × 15 cm	2	
(d) Standard Dressing BPC Sterile Unmedicated 15cm × 10 cm	2	
(e) Open Weave Bandage BPC 7.5cm × 3.5m	6	
(f) Waterproof Plasters I/W Sterile BPC 3.8 cm × 3.8 cm	10	
	7.5 cm × 2.5 cm	10
(g) Paraffin Gauze Dressing I/W Sterile for Burns		
40 cm × 10 cm	4	
10 cm × 10 cm	6	
(h) Polythene Bags (to cover burns on limbs) 38.5 cm × 22.5 cm with adhesive tie	2	
(i) Cetrimide Cream 0.5% W/W 50 gm tube	2	
(j) Analgesics in Container clearly labelled with name and directions for use. Type and quantity as approved	—	
(k) Scissors, rustless and stainless steel, blunt points 10 cm	1	
(l) Safety pins, assorted rustless (Minimum size 5 cms)	6	
(m) First Aid Instructions in English printed on waterproof material	—	

PART III

Food Rations

9. Packaging and marking—(1) The ration for each 1 or 2 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 "M.O.T. APPROVED" or mark of another approving authority. 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 rations and 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.

10. Calorific value—The ration for each person shall have a calorific value of not less than 10,000 kilojoules.

11. Composition of ration—(1) The composition of the ration shall be as follows:

(a) 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.

(b) 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 percent by weight of the fat component of the ration.

(c) the moisture content of barley sugar and of a food tablet shall not exceed 3 percent and 7 percent by weight respectively. The moisture content of a glucose tablet shall be as low as possible and compatible with the recommended operational shelf-life.

(d) the ration shall be palatable to a survivor limited to a fresh water intake of 0.5 litres per day.

(e) the ration shall remain palatable throughout the recommended shelf-life of the ration under extremes of climatic conditions normally encountered.

(f) the ration shall be readily divisible into at least 3 one day portions for 1 person.

PART IV

Fresh Water

12. General requirements—(1) The water shall be microbiologically and chemically suitable for drinking and conform 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 Chief Surveyor.

(3) The water shall remain palatable in its stowage in the survival craft throughout a temperature range of -30°C to $+65^{\circ}\text{C}$.

13. Water containers—(1) Sachets.

(a) The water shall be packed in efficiently sealed sachets which are impermeable, moisture proof and have an effective vapour barrier.

(b) The sachets shall have a cut above the top seal to facilitate easy opening with wet or cold hands.

(c) Individual sachets shall contain not less than 50 and not more than 150 millilitres of water.

(d) Water filled sachets shall be capable of withstanding a compressive load test of 5 kilonewtons without bursting.

(e) Water sachets packed in a liferaft emergency pack shall not be affected by any of the prototype tests carried out on a liferaft.

(f) When included in the emergency pack of an operationally packed liferaft there shall be no more than 2 percent of the water sachets damaged after the appropriate drop test.

(g) The recommended shelf life of the water sachets shall be at least 3 years.

(h) The outer packaging shall be marked with the following information:

- (i) manufacturer's name or trade mark;
- (ii) contents capacity;
- (iii) lot number;
- (iv) date of manufacture;
- (v) a recommended daily consumption per person;
- (vi) M.O.T. APPROVED (or mark of another approving authority).

(2) Cans

(a) A can in which drinking water is supplied shall be hermetically sealed and have vacuum of not less than 510mm of mercury.

(b) It shall be constructed of tinsplate of minimum thickness 0.30mm and with a tin content which will conform with the relevant part of British Standard 113 Section 10 or approved New Zealand equivalent.

(c) It shall be constructed with a double seam and properly balanced interlocking hooks.

(d) It shall be plain internally, but externally it shall be coated with a machine applied golden lacquer and then stoved.

(e) After filling the seams shall be inspected, and any exposed areas shall be suitably lacquered.

(f) A click test to confirm the vacuum shall be carried out on each can 7 days after filling.

(g) The can shall be free from dents or any signs of corrosion.

(h) The capacity of the can shall not be greater than 500 millilitres.

(i) The can shall not be affected by any of the prototype tests carried out on a liferaft.

(j) The can shall be clearly marked on the outside with:

- (i) manufacturer's name or trade mark;
- (ii) drinking water and capacity in millilitres;
- (iii) lot or batch number;
- (iv) date of manufacture;
- (v) a recommended daily consumption per person;
- (vi) M.O.T. APPROVED (or mark of another approving authority).

(3) Bottles

(a) A bottle in which drinking water is supplied shall be manufactured from a material which will not contaminate or effect the taste of water.

(b) It shall not be affected by any other prototype tests carried out on a liferaft.

(c) The material from which the bottle is made shall be opaque.

(d) The capacity of the bottle shall not be greater than 500 millilitres.

(e) The bottle shall be capable of being opened by a survivor with cold hands.

(f) The minimum recommended shelf life of the water bottle and its contents shall be at least 3 years.

(g) The bottle filling cap shall be fitted with a watertight seal, and have positive locking arrangements which will not be loosened by vibration.

(h) 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.

(i) The bottle shall be marked on the outside with:

- (i) manufacturer's name or trade mark;
- (ii) date of filling;
- (iii) date of expiry;
- (iv) drinking water and capacity in millilitres;
- (v) recommended daily consumption per person;
- (vi) lot or batch number;
- (vii) M.O.T. APPROVED (or mark of another approving authority).

(4) Water tanks

(a) Tanks fitted for fresh water in a survival craft may be of metal or a plastic material acceptable to the Chief Surveyor.

(b) Each tank is to be filled and emptied to ensure cleanliness and to check for watertightness.

(c) The tank shall be strong enough to withstand a head of water of at least 1.5 metres.

(d) Where necessary the inside of the tank shall be suitably coated to prevent contamination or unpleasant taste.

(e) Tanks which are not portable shall be fitted with drain plugs constructed of non-corrosive material.

(f) Filling plugs and aperture covers shall be of non-ferrous materials, neatly fitted and made properly watertight to prevent the entry of contaminants.

(g) Tanks shall be sited well clear of any propelling machinery.

(h) At least 1 rustproof dipper with a lanyard shall be provided for each tank.

(i) The inside of tanks constructed with glass reinforced plastic must be smooth and sealed with a gel coat.

(j) Tanks made out of glass reinforced plastic shall be opaque.

(k) The tank shall be clearly marked on the outside with the contents and its capacity in litres.

PART V

Lifeboat and Rescue Boat Compasses

14. Compass type—(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.

(2) The liquid shall be colourless and free from turbidity and formation of flocks.

(3) The compass shall function efficiently over a temperature range of -30°C to +65°C without leakage, formation of bubbles or other defects.

15. General requirements—(1) 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.

(2) 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.

(3) 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.

(4) 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.

(5) 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.

16. Magnet—The magnet shall have ample directive force. In New Zealand a period of 16 to 20 seconds after a deflection of 40 degrees at a temperature of $15^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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 of which it was originally deflected.

17. Supporting force on pivot—Over the temperature range of -30°C to $+65^{\circ}\text{C}$, the supporting force of the immersed card system on the pivot shall be between 0.04 and 0.10 newtons.

18. Card size and markings—The compass card shall be not less than 60mm in diameter. When the diameter of the card is less than 100mm, 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 1 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.

19. Lubber mark and illumination—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.

20. Material for card centre—The centre of the card shall be of sapphire or equally hard jewel.

21. Material for card pivot—The pivot of the card shall be of iridium or equally hard material.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.
LU11

The Shipping (Lifebuoys) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Lifebuoys) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Lifebuoys

Part I

Lifebuoys (Solos) for Use on Ships of Classes I to X Inclusive

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 50mm \times 100mm in size.

(5) A lifebuoy shall have an outer diameter of not more than 800mm and an inner diameter of not less than 400mm.

(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 2.5kg 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 4kg, 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 9.5mm in diameter and of length not less than 4 times the outside diameter of the lifebuoy. The grabline shall be secured at 4 equidistant points around the circumference of the lifebuoy to form 4 equal loops.

(10) Lifebuoys constructed to the requirements of the Shipping (Lifesaving Appliances) Rules 1968 shall be deemed to comply with this performance standard so long as they remain in good condition to the satisfaction of a Surveyor.

2. Performance—(1) A lifebuoy shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$.

(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 14.5kg of iron in fresh water for a period of 24 hours.

(6) It shall be deemed to be capable of supporting 2 persons in the water.

(7) 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 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 "M.O.T. APPROVED", or mark of another approving authority.

(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**Lifebuoys (610mm) for Use Only on Ships of Classes IV, V, VI, IX, Ships of Classes III and VIII of Less Than 500 Gross Tonnage and Ships of Class X Which Are Not Deep Sea Fishing Vessels**

4. 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 4 evenly spaced points with a piece of retro-reflective material 50mm × 100mm in size.

(5) If of circular shape a lifebuoy shall have an outer diameter of not less than 610mm and an inner diameter of not less than 350mm. If of horseshoe shape it shall have equivalent buoyancy.

(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 1.3kg 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 4kg 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 6mm in diameter and of length not less than 4 times the outside diameter of the lifebuoy. The grabline shall be secured at 4 equidistant points around the circumference of the lifebuoy to form 4 equal loops.

5. Performance—(1) It shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$.

(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 10.5kg 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.

(7) It shall be deemed to be capable of supporting 1 person in the water.

6. Marking—(1) A lifebuoy shall be marked in block capitals of the Roman alphabet with the name and 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 "M.O.T APPROVED", or mark of another approving authority.

(3) A lifebuoy shall be permanently marked with the maximum height above the waterline at which it can be stowed.

Part III**Lifebuoy Self-igniting Lights**

7. 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.

8. Performance—(1) A lifebuoy self-igniting light shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(2) It shall operate throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$.

(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.

9. Marking—(1) A lifebuoy self-igniting light shall be marked indelibly with:

(a) the manufacturer's name or trade mark

(b) the words "M.O.T. APPROVED", or mark of another approving authority;

(c) clear and concise directions for use in English supported where necessary by illustrations;

(d) type of energy source;

(e) date of manufacture and expiry in the case of a light with a non-replaceable energy source; and

(f) maximum height above waterline at which it can be stowed.

10. Instructions and information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard on Training Manual and Maintenance Instructions and, if appropriate, in the instructions for on-board maintenance specified in Part II of the Performance Standard on Training Manual and Maintenance Instructions 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:

(a) the stowage of the light and attachment to lifebuoy;

(b) type of energy source and if replaceable, method and frequency of replacement;

(c) type of light source and whether replaceable;

(d) any maintenance requirements including the method and recommended frequency of checks of energy source if energy source capable of checking; and

(e) operation of light and duration.

Part IV**Lifebuoy Self-activating Smoke Signals**

11. 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 performance standard.

12. Performance

(a) A lifebuoy self-activating smoke signal shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(b) It shall operate throughout a sea water temperature range of -1°C to $+30^{\circ}\text{C}$.

(c) It shall be resistant to deterioration from exposure to sunlight.

(d) It shall be capable of satisfactory operation in a seaway.

(e) 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.

(f) It shall not ignite explosively or emit any flame during the entire smoke emission time of the signal.

(g) It shall not be swamped in a seaway.

(h) It shall continue to emit smoke when fully submerged for a period of at least 10 seconds.

(i) It shall be capable of quick release from its stowed position.

(j) It shall be safe to operate in waters covered by a low flashpoint liquid.

(k) 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 3 years, unless in the case of a self-igniting light energy source it is possible to readily renew the energy source.

13. Marking—A lifebuoy self-activating smoke signal shall be marked indelibly with:

(a) the manufacturer's name or trade mark;

(b) the lot number or other means of identifying the signal;

(c) the words "M.O.T. APPROVED" or the mark of another approving authority;

(d) clear and concise directions for use in English supported where necessary by illustrations;

(e) the date of manufacture and date of expiry;

(f) type of energy source in the case of a signal provided with a self-activating light; and

(g) maximum height above the waterline at which it can be stowed.

14. Instructions and information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard on Training Manual and Maintenance Instructions and, if appropriate, in the instructions for on-board maintenance specified in Part II

of the Performance Standard on Training Manual and Maintenance Instructions 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:

(a) the stowage of signal and attachment to lifebuoy;

(b) type of energy source of self-igniting light if provided and if replaceable, method and frequency of replacement;

(c) type of light source of self-igniting light if provided and whether replaceable;

(d) 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

(e) operation of signal and duration.

Part V**Lifebuoy Buoyant Lifelines**

15. Construction—(1) A lifebuoy buoyant lifeline shall be non-kinking.

(2) It shall have a diameter of not less than 8mm.

(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.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU6

The Shipping (Immersion Suits and Thermal Protective Aids) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Immersion Suits and Thermal Protective Aids) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule**Performance Standard 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 Chief Surveyor.

(2) As applicable the materials of the suit shall be rot-proof, corrosion resistant and not be unduly affected by sea water, 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 Chief Surveyor.

(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 IV of the Performance Standard for Lifejackets 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 the Performance Standard for Lifejackets 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 $+65^{\circ}\text{C}$.

(2) It shall operate throughout a seawater temperature range of -1°C to $+30^{\circ}\text{C}$.

(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:

(a) climb up and down a vertical ladder at least 5 metres in length;

(b) perform normal duties during abandonment;

(c) jump from a height of not less than 4.5 metres into the water without damaging or dislodging the immersion suit, or being injured;

(d) 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 and II of the Performance Standard for Lifejackets, or an immersion suit with a lifejacket shall:

(a) be able to turn from a face-down to a face-up position in not more than 5 seconds;

(b) float in a stable face-up position with the mouth not less than 120mm clear of the water.

3. Marking—(1) An immersion suit and the valise or container in which it is stowed shall be marked indelibly with:

(a) the manufacturer's name or trade mark;

(b) means of identification of the date of manufacture;

(c) the size range for which it is designed;

(d) the words "M.O.T. APPROVED", or mark of another approving authority;

(e) serial number; and

(f) 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—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and, if appropriate, in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) description of the immersion suit and attachments;

(b) donning;

(c) operation of any auxiliary buoyancy;

(d) method of stowage in pack;

(e) any servicing and maintenance requirements;

(f) cleaning; and

(g) use.

Part II

Thermal Protective Aids

5. 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 $^{\circ}\text{K}$ 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.

6. Performance—(1) A thermal protective aid shall not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$.

(2) It shall function properly throughout the air temperature range -30°C to $+20^{\circ}\text{C}$.

(3) It shall function throughout the sea water temperature range -1°C to $+30^{\circ}\text{C}$ 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.

7. 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 "M.O.T. APPROVED" or mark of another approving authority.

8. Instructions and information—Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) stowage in lifeboats and liferafts;

(b) unpacking;

(c) donning in a survival craft;

(d) removal in the water (if applicable);

(e) purpose, and when it should be used;

(f) whether or not ability to swim is impaired when wearing the aid; and

(g) inspection recommendations.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Shipping (Dinghies) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Dinghies) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Dinghies

1. General—(1) All dinghies shall:

(a) be constructed with proper workmanship and materials;

(b) not be damaged in stowage throughout the air temperature range -30°C to $+65^{\circ}\text{C}$;

(c) be capable of operating throughout the seawater temperature range -1°C to $+30^{\circ}\text{C}$;

(d) be rot-proof, corrosion-resistant, and not be unduly affected by seawater, oil or fungal attack;

(e) be resistant to deterioration from exposure to sunlight;

(f) be of a highly visible colour on all parts where this will assist detection

(g) 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 a Surveyor of Ships;

(h) be capable of satisfactory operation in a sea environment.

2. Construction—(1) All dinghies shall be properly constructed in compliance with the provisions of NZS 5829 Part I or such equivalent standard as may be approved by the Chief Surveyor.

(2) All dinghies shall be not less than 3.5 metres in length.

3. Dinghy—(1) Inboard Engine

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

(i) be provided with either a manual starting system, or a power starting system with 2 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 Chief Surveyor having regard to the particular voyages in which the ship carrying the dinghy is constantly engaged, a different temperature is appropriate; the starting systems shall not be impeded by the engine casing, thwarts or other obstructions;

(ii) be capable of operating for not less than 5 minutes after starting from cold with the dinghy out of the water; and

(iii) be capable of operating when the dinghy is flooded up to the centreline of the crank shaft.

(2) Outboard Engine

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

(b) 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 Chief Surveyor having regard to the particular voyages in which the ship carrying the dinghy is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, thwarts or other obstructions.

(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 dinghy.

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

(5) All dinghies 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.

(6) The dinghy 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.

(7) The dinghy engine and accessories shall be designed to limit electromagnetic emissions so that engine operation does not interfere with the operation of radio equipment used in the dinghy.

(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 dinghy shall be at a voltage not exceeding 55 volts direct current or 55 volts root mean square alternating current and shall be capable of being disconnected automatically at the dinghy embarkation station.

(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. Dinghy Fittings—(1) All dinghies shall be provided with at least 1 drain valve fitted near the lowest point in the hull, which shall automatically open to drain water from the hull when the dinghy is not waterborne and shall automatically close to prevent entry of water when the dinghy is waterborne. Each drain valve shall be provided with a cap or plug to close the valve, which shall be attached to the dinghy by a lanyard, chain, or other suitable means. Drain valves shall be readily accessible and capable of being closed from inside the dinghy and their position shall be clearly indicated.

(2) All dinghies 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 dinghy 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 dinghy and the tiller shall be permanently installed on or linked to the rudder stock. However, if the dinghy 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.

(3) Except in the vicinity of the rudder, propeller or outboard engine, a buoyant lifeline shall be becketed around the outside of the dinghy.

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

(5) Every dinghy to be launched by a fall or falls shall be fitted with a release mechanism complying with Part IV of the Performance Standard for Rescue Boats.

(6) Every dinghy shall be fitted with a release device to enable the forward painter to be released when under tension.

(7) Dinghies intended for launching down the side of a ship shall have skates and fenders as necessary to facilitate launching and prevent damage to the dinghy.

(8) Unless expressly provided otherwise, every dinghy shall be provided with effective means of bailing or be automatically self-bailing.

5. Markings—(1) The dimensions of the dinghy 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 dinghy in clear permanent characters.

(2) The name and port of registry of the ship to which the

dinghy belongs shall be marked on each side of the dinghy's bow in block capitals of the Roman alphabet.

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

6. Dinghy Equipment—(1) All items of dinghy equipment, with the exception of the boat-hook which shall be kept available for fending off purposes, shall be secured within the dinghy 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 dinghy equipment shall be as small and of as little mass as possible and shall be packed in suitable and compact form.

(2) The equipment of every dinghy shall consist of:

(a) 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 dinghy by lanyards or chains;

(b) a buoyant bailer;

(c) a binnacle containing an efficient compass complying with the requirements of Part V of the Performance Standard for Survival Craft Equipment and Rations which is luminous or provided with suitable means of illumination;

(d) a sea-anchor complying with the requirements of Part 1 of the Performance Standard for Survival Craft Equipment and Rations;

(e) a painter of sufficient length and strength, attached to the release device complying with the requirements of clause 4 (6) of this performance standard and placed at the forward end of the dinghy;

(f) 1 waterproof electric torch suitable for Morse signalling, together with 1 spare set of batteries and 1 spare bulb in a waterproof container;

(g) 1 whistle or equivalent sound signal;

(h) a first-aid outfit complying with the requirements of Part II of the Performance Standard for Survival Craft Equipment and Rations in a waterproof case capable of being closed tightly after use;

(i) 2 buoyant rescue quoits, attached to not less than 30 metres of buoyant line with a breaking strain of at least 1.0kN;

(j) thermal protective aids sufficient for 10 per cent of the number of persons the dinghy is permitted to accommodate or 2, whichever is the greater;

(k) a boat hook;

(l) a bucket;

(m) a knife or hatchet;

(n) a portable fire extinguisher.

7. Instructions and Information—(1) Instructions and information required for inclusion in the training manual specified in Part I of the Performance Standard for Training Manual and Maintenance Instructions and in the instructions for on-board maintenance specified in Part II of the Performance Standard for Training Manual and Maintenance Instructions 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:

(a) general description of the dinghy and its equipment;

(b) installation arrangements;

(c) operational instructions including use of associated survival equipment;

(d) survival instructions;

(e) emergency repair instructions;

(f) deployment, boarding and launching instructions;

- (g) method of launching from within the dinghy;
- (h) release from launching appliance;
- (i) on board maintenance requirements;
- (j) servicing requirements;
- (k) use of engine and accessories;
- (l) recovery of dinghy including stowage and securing.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU10

The Shipping (Training Manuals and Instructions for On-board Maintenance) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Training Manuals and Instructions for On-Board Maintenance) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Lifesaving Appliances) Regulations 1989.

Schedule

Performance Standard for Training Manuals and Instructions for On-board Maintenance

Part I

Training Manuals

1. General Requirements—(1) A training manual shall contain instructions and information on the lifesaving 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.

2. Content of Training Manual—(1) As appropriate, the following shall be explained in detail and contained in the training manual:

- (a) donning of lifejackets and immersion suits;
- (b) muster at the assigned stations;
- (c) boarding, launching, and clearing the survival craft, rescue and inflated boats;
- (d) method of launching from within the survival craft;
- (e) release from launching appliances;
- (f) methods and use of devices for protection in launching areas;
- (g) illumination in launching areas;
- (h) use of all survival equipment;
- (i) use of all detection equipment;
- (j) with the assistance of illustrations, the use of radio lifesaving appliances;
- (k) use of sea-anchors;
- (l) use of engines and accessories;
- (m) recovery of survival craft, rescue and inflated boats including stowage and securing;
- (n) hazards of exposure and the need for warm clothing;

- (o) best use of the survival craft facilities in order to survive;
- (p) methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers), breeches-buoy and shore lifesaving apparatus and ship's line-throwing apparatus;
- (q) all other functions contained in the muster list and emergency instructions; and
- (r) instructions for emergency repair of the lifesaving appliances.

Part II

Instructions for On-board Maintenance

3. General—Instructions for on-board maintenance of lifesaving appliances shall be in easily understood terms and illustrated wherever possible.

4. Content of Instructions—As appropriate the instructions shall include the following for each appliance:

- (1) a checklist for use when carrying out the inspections required by the Shipping (Lifesaving Appliances) Regulations 1989;
- (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.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

LU9

The Shipping (Non-portable Fire Extinguishers) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Non-Portable Fire Extinguishers) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Non-portable Fire Extinguishers

PART I

Non-portable Foam Fire Extinguishers

1. Every foam fire extinguisher, other than a portable fire extinguisher shall be constructed of suitable materials and shall be of an efficient design and of sufficient strength to withstand with an adequate factor of safety the maximum internal pressure to which it may be subjected and shall be capable of withstanding a test by hydraulic pressure suitably in excess of the maximum working pressure. The maximum working pressure shall be the equilibrium pressure that develops within the body at 70°C when the correctly charged extinguisher has been operated with all outlets closed.

2. Where the extinguisher is provided with a gas cylinder as the means for expelling the extinguishing medium, such gas cylinder shall be constructed in accordance with British Standards Institution Specification number BS 5045: Part 1:

1976 or any other Standards Specification approved by the Chief Surveyor.

3. The extinguisher shall be provided with a nozzle and a reinforced discharge hose construction to withstand 4 times the maximum working pressure specified in clause 1 of this Performance Standard.

4. Where the extinguisher is provided with an inner container, such container shall be adequately supported.

5. Any necessary openings in the extinguisher body shall be fitted with caps or covers so designed that any pressure remaining in the container may be released gradually before the cap or cover can be removed completely.

6. Every part of the extinguisher shall, where necessary, be protected against corrosion.

7. The extinguisher shall be provided with a controllable device to enable the discharge to be interrupted and a means to prevent the loss of liquid when the extinguisher is standing.

8. The extinguisher actuating mechanism shall be protected so that it is safeguarded against inadvertent operation.

9. The design shall permit the ready availability of the extinguisher to be verified as required and ensure that it will be apparent whether or not the extinguisher has been operated.

10. A fully charge extinguisher shall when operated under normal conditions be capable of projecting foam a distance of 14 metres for a period of not less than 90 seconds in the case of an extinguisher of 135 litres capacity and over, and a distance of 10 metres for a period of not less than 60 seconds in the case of an extinguisher of 45 litres or over but under 135 litres capacity.

11. The outside of the extinguisher body shall be clearly marked in accordance with the relevant parts of Section Five of the British Standards Institution Specification Number BS 5423: 1987 or any other Standards Specification approved by the Chief Surveyor.

PART II

Non-portable Carbon Dioxide Fire Extinguishers

12. Every carbon dioxide fire extinguisher, other than a portable fire extinguisher, shall be provided with cylinders constructed in accordance with British Standards Institution Specification Number BS 5396: 1976 or any other Standards Specification approved by the Chief Surveyor.

13. Each cylinder shall be provided with an internal discharge tube and a valve to release the gas.

14. The extinguisher shall be provided with a discharge hose which shall be reinforced so as to withstand a pressure of at least 12.2 MPa when the necessary couplings are fitted. The bore of the discharge hose shall not be less than the sizes respectively set forth in the following table:

Capacity of extinguisher	Minimum bore of discharge hose
16 kg	10 mm
45 kg	12 mm

The discharge hose shall be provided with a horn which shall be of electrically non-conducting material and of a design which will reduce the velocity of the gas discharged. The metal part of the operating handle shall be suitably sheathed to protect the hand of the operator from extreme cold.

15. At any temperature between 15°C and 18°C inclusive, the extinguisher shall discharge gas at such a rate that carbon dioxide equal in weight to 3/4 of the capacity of the container will be discharged in the periods respectively set forth in the following table:

Capacity of Extinguisher	Period
16 kg	30 to 45 seconds
45 kg	60 to 90 seconds

16. The outside of the extinguisher shall be clearly marked in accordance with Section Seven of the British Standards Institution Specification Number BS 5423:1987 or any other Standards Specification approved by the Chief Surveyor.

PART III

Non-portable Dry Powder Fire Extinguishers

17. Every dry powder fire extinguisher, other than a portable fire extinguisher shall be constructed of suitable materials and shall be of an efficient design and of sufficient strength to withstand with an adequate factor of safety the maximum internal pressure to which it may be subjected and shall be capable of withstanding a test by hydraulic pressure suitably in excess of the maximum working pressure. For the purpose of this Performance Standard the maximum working pressure shall be the equilibrium pressure that develops within the body at 70°C when the correctly charged extinguisher has been operated with all outlets closed.

18. Where the extinguisher is provided with a gas cylinder as the means for expelling the extinguishing medium, such gas cylinder shall be constructed in accordance with British Standards Institution Specification Number BS 5045: Part 1:1976 or any other Standards Specification approved by the Chief Surveyor.

19. The extinguisher shall be provided with a nozzle and a reinforced hose constructed to withstand 4 times the maximum working pressure specified in paragraph 1 of this Performance Standard.

20. Any necessary openings in the extinguisher body shall be fitted with caps or covers so designed that any pressure remaining in the container may be released gradually before the cap or cover can be removed completely.

21. Every part of the extinguisher shall, where necessary, be protected against corrosion.

22. The extinguisher shall be effectively sealed to prevent the ingress of moisture, but such sealing arrangements shall not interfere with the discharge of the extinguisher.

23. The extinguisher shall be provided with a controllable device to enable the discharge to be interrupted.

24. The extinguisher actuating mechanism shall be protected so that it is safeguarded against inadvertent operation.

25. The design shall permit the ready availability of the extinguisher to be verified as required and ensure that it will be apparent whether or not the extinguisher has been operated.

26. A fully charge extinguisher shall, where operated under normal conditions, be capable of discharging not less than 85 percent of the mass of the dry powder charge. The discharge rate shall be not less than 1kg per second.

27. The outside of the extinguisher body shall be clearly marked in accordance with the relevant parts of Section Five of the British Standards Institution Specification Number BS 5423: 1987 or any other Standards Specification approved by the Chief Surveyor.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

v3

The Shipping (International Shore Connection) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (International Shore Connection) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

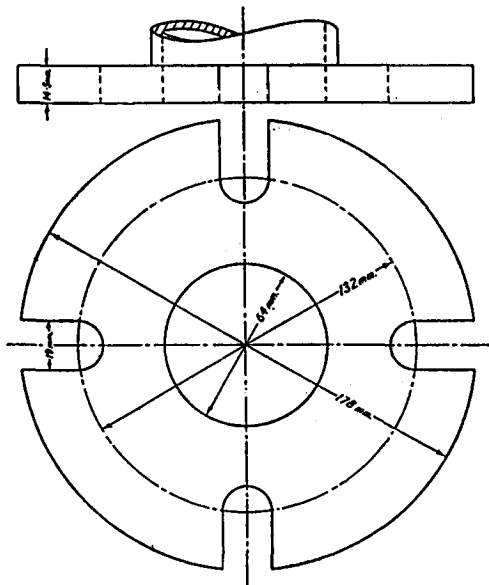
Schedule

Performance Standard for International Shore Connection

1. International Shore Connection—(1) The international shore connection, as hereinafter illustrated, shall be in accordance with the following specification:

Outside diameter:	178 mm
Inner diameter:	64 mm
Bolt circle diameter:	132 mm
Holes:	4 holes of 19 mm diameter equidistantly slotted to the flange periphery
Flange thickness:	14.5 mm minimum
Bolts:	4, each 16 mm diameter, 50 mm in length with 8 washers and 4 nuts
Flange surface:	Flat face Gasket: Any suited to 1035 kPa service

(2) The connection shall be constructed of material suitable for 1035 kPa service. The flange shall be a flat face on 1 side, and to the other there shall be permanently attached a coupling which will fit the ship's hydrants and hose. The connection shall be kept aboard the ship together with its gasket, bolts, washers and nuts.



INTERNATIONAL SHORE CONNECTION

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

v4

The Shipping (Fixed Deck Foam Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Fixed Deck Foam Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Fixed Deck Foam Systems

1. The arrangements for providing foam shall be capable of delivering foam to the entire cargo tanks deck area as well as into any cargo tank, the deck of which has been ruptured.

2. The deck foam system shall be capable of simple and rapid operation. The main control station for the system shall be suitably located outside the cargo area adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.

3. The rate of supply of foam solution (that is, the mixture of foam concentrate and water before expansion) shall be not less than the following whichever is the greatest:

(1) 0.6 litre per minute per square metre of cargo tanks deck area, where cargo tanks deck area means the maximum breadth of the ship times the total longitudinal extent of the cargo tank spaces;

(2) 6 litres per minute per square metre of the horizontal sectional area of the single tank having the largest such area; or

(3) 3 litres per minute per square metre of the area protected by the largest monitor, such area being entirely forward of the monitor, but not less than 1,250 litres per minute.

4. Sufficient foam concentrate shall be supplied to ensure at least 20 minutes of foam generation in ships fitted with an inert gas system or 30 minutes of foam generation in ships not fitted with an inert gas system when using the solution rates stipulated in clause 3 of this Performance Standard. The foam expansion ratio (that is, the ratio of the volume of foam produced to the volume of the mixture of foam concentrate and water before expansion) shall not generally exceed 12 to 1.

5. Foam from the fixed foam system shall be supplied by means of monitors and foam applicators. At least 50 percent of the foam solution rate required in sub-paragraphs (1) and (2) of paragraph 3 of this Performance Standard shall be delivered from each monitor. On tankers of less than 4,000 tonnes deadweight, applicators may be substituted for an installation of monitors. In such a case the capacity of each applicator shall be at least 25 percent of the foam solution rate required in sub-clause (1) or (2) of clause 3 of this Performance Standard.

6. (1) The number and position of monitors shall be such as to comply with paragraph 1 of this Performance Standard. The capacity of any monitor shall be at least 3 litres per minute of foam solution per square metre of deck area protected by that monitor, such area being entirely forward of the monitor. Such capacity shall be not less than 1,250 litres per minute.

(2) The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall not be more than 75 percent of the monitor throw in still air conditions.

7. A monitor and hose connection for a foam applicator shall be situated both port and starboard at the front of the poop or accommodation spaces facing the cargo tanks deck. On tankers of a deadweight of less than 4,000 tonnes not fitted with monitors a hose connection for a foam applicator shall be situated both port and starboard at the front of the poop or accommodation spaces facing the cargo tanks deck.

8. The capacity of any applicator shall be not less than 400 litres per minute and the applicator throw in still air conditions

shall be not less than 15 metres. The number of foam applicators provided in accordance with the requirements of paragraph 5 of this Performance Standard shall be not less than four. The number and disposition of foam main outlets shall be such that foam from at least two applicators can be directed on to any part of the cargo tank deck area.

9. Valves shall be provided in the foam main, and in the fire main when this is an integral part of the deck foam system, immediately forward of any monitor position to isolate damaged sections of those mains.

10. Operation of a deck foam system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu22

The Shipping (Fixed Fire Detection and Fire Alarm Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. **Title and commencement**—(1) This notice may be cited as the Shipping (Fixed Fire Detection and Fire Alarm Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of August 1989.

2. **Performance Standard prescribed**—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Fixed Fire Detection and Fire Alarm Systems

1. **General**—(1) Any required fixed fire detection and fire alarm system with manually operated call points shall be capable of immediate operation at all times.

(2) Power supplies and electric circuits necessary for operation of the system shall be monitored for loss of power or fault conditions as appropriate. Occurrence of a fault condition shall initiate a visual and audible fault signal at the control panel which shall be distinct from a fire signal.

(3) There shall be not less than two sources of power supply for the electrical equipment used in the operation of the fire detection and fire alarm system, one of which shall be an emergency source. The supply shall be provided by separate feeders reserved solely for that purpose. Such feeders shall run to an automatic change-over switch situated in or adjacent to the control panel for the fire detection system.

(4) Detectors and manually operated call points shall be grouped into sections. The activation of any detector or manually operated call point shall initiate a visual and audible fire signal at the control panel and indicating units. If the signals have not received attention within two minutes an audible alarm shall be automatically sounded throughout the crew accommodation and service spaces, control stations and machinery spaces of Category A. This alarm sounded system need not be an integral part of the detection system.

(5) The control panel shall be located on the navigating bridge or in the main fire control station.

(6) Indicating units shall denote the section in which a detector or manually operated call point has operated. At least one unit shall be so located that it is easily accessible to responsible

members of the crew at all times, when at sea or in port except when the ship is out of service. One indicating unit shall be located on the navigating bridge if the control panel is located in the main fire control station.

(7) Clear information shall be displayed on or adjacent to each indicating unit about the spaces covered and the location of the sections.

(8) No section covering more than one deck within accommodation spaces, service spaces and control stations shall be permitted except a section which covers an enclosed stairway. In order to avoid delay in identifying the source of fire, each section shall contain not more than 100 detectors and shall cover not more than 50 rooms.

(9) In passenger ships a section of detectors shall not serve spaces on both sides of the ship nor on more than one deck and neither shall it be situated in more than one main vertical zone except that the Chief Surveyor, if satisfied that the protection of the ship against fire will not thereby be reduced, may permit such a section of detectors to serve both sides of the ship and more than one deck.

(10) A section of fire detectors covering a control station, service space, accommodation space or cargo space shall not include a machinery space of Category A.

(11) Detectors shall be operated by heat, smoke or other products of combustion, flame or any combination of these factors. Detectors operated by other factors indicative of incipient fires may be accepted by the Chief Surveyor provided that they are no less sensitive than such detectors. Flame shall be used only as additional to smoke or heat detectors.

(12) Suitable instructions and space components for testing and maintenance shall be provided.

(13) The function of the detection system shall be periodically tested to the satisfaction of the Chief Surveyor by means of equipment producing hot air at the appropriate temperature, or smoke or aerosol particles having the appropriate range of density or particle size, or other phenomena associated with incipient fires to which the detector is designed to respond. All detectors shall be of a type such that they can be tested for correct operation and restored to normal surveillance without the renewal of any component.

(14) The fire detection system shall not be used for any other purpose except that closing of fire doors and similar functions may be permitted at the control panel.

2. **Installation requirements**—(1) Manually operated call points shall be installed throughout the accommodation spaces, service spaces and control stations. One manually operated call point shall be located at each exit. Manually operated call points shall be readily accessible in the corridors of each deck such that no part of the corridor is more than 20 metres from a manually operated call point.

(2) Smoke detectors shall be installed in all stairways, corridors and escape routes within accommodation spaces.

(3) Where a fixed fire detection and fire alarm system is required for the protection of spaces other than those specified in clause 2(2) of this Performance Standard at least one detector complying with clause 1(11) of this Performance Standard shall be installed in each such space.

(4) Detectors shall be located for optimum performance. Positions near beams and ventilation ducts or other positions where patterns of air flow could adversely affect performance and positions where impact or physical damage is likely shall be avoided. In general, detectors which are located in overhead positions shall be a minimum distance of 0.5 metres away from bulkheads.

(5) The maximum spacing of detectors shall be in accordance with the table below:

Type of detector	Maximum floor area per detector	Maximum distance apart between centres	Maximum distance away from bulkheads
Heat	37 m ²	9 m	4.5 m
Smoke	74 m ²	11 m	5.5 m

The Chief Surveyor may require or permit other spacings based upon test data which demonstrate the characteristics of the detectors.

(6) Electrical wiring which forms part of the system shall be so arranged as to avoid galleys, machinery spaces of Category A, and other enclosed spaces of high fire risk except where it is necessary to provide for fire detection or fire alarm in such spaces or to connect to the appropriate power supply.

3. Design requirements—(1) The system and equipment shall be suitably designed to withstand supply voltage variation and transients, ambient temperature changes, vibration, humidity, shock, impact and corrosion normally encountered in ships.

(2) Smoke detectors required by clause 2(2) shall be certified to operate before the smoke density exceeds 12.5 percent obscuration per metre, but not to operate until the smoke density exceeds 2 percent obscuration per metre. Smoke detectors to be installed in other spaces shall operate within sensitivity limits to the satisfaction of the Chief Surveyor having regard to the avoidance of detector insensitivity or over-sensitivity.

(3) Heat detectors shall be certified to operate before the temperature exceeds 78°C but not to operate until the temperature exceeds 54°C, when the temperature is raised to those limits at a rate less than 1°C per minute. At higher rates of temperature rise, the heat detector shall operate within temperature limits to the satisfaction of the Chief Surveyor having regard to the avoidance of detector insensitivity or oversensitivity.

(4) The permissible temperature of operation of heat detectors may be increased to 30°C above the maximum deckhead temperature in drying rooms and similar spaces of a normal high ambient temperature.

4. Special requirements for periodically unattended machinery spaces—For periodically unattended machinery spaces the fixed fire detection and fire alarm system shall comply with the following additional requirements:

(1) This fire detection system shall be so designed and the detectors so positioned as to detect rapidly the onset of fire in any part of those spaces and under any normal conditions of operation of the machinery and variations of ventilation as required by the possible range of ambient temperatures. Except in spaces of restricted height and where their use is specially appropriate detection systems using only thermal detectors shall not be permitted. The detection system shall initiate audible and visual alarms distinct in both respects from the alarms of any other system not indicating fire, in sufficient places to ensure that the alarms are heard and observed on the navigating bridge and by a responsible engineer officer. When the navigating bridge is unmanned the alarm shall sound in a place where a responsible member of the crew is on duty.

(2) After installation the system shall be tested under varying conditions of engine operation and ventilation.

5. Special requirements for cargo spaces—In cargo spaces the system shall comply with the following additional requirements:

(1) Detectors shall be grouped into separate sections such that a section shall cover not more than one cargo space. Each section shall contain not more than 100 detectors.

(2) The type, number and spacing of detectors shall be to the satisfaction of the Chief Surveyor taking into account the conditions of ventilation and other factors prevailing in the space in which the detectors are installed.

(3) In special category spaces and ro-ro cargo spaces, the system shall be capable of rapidly detecting the onset of fire. After being installed, the system shall be tested under normal ventilation conditions and shall given an overall response time to the satisfaction of the Chief Surveyor.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

v5

The Shipping (Miscellaneous Fire Appliances) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Miscellaneous Fire Appliances) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Miscellaneous Fire Appliances

1. Fire buckets—Every fire bucket provided shall be red in colour, shall be clearly marked with the word "FIRE", and shall have a capacity such as to comply with the said codes but in no case less than 8 litres.

2. Pipes—Water pipes shall not be made of cast iron and if made of iron or steel they shall be galvanised.

3. Hoses—Fire hoses shall be made of closely woven flax-canvas rubber, or suitable approved synthetic materials, and shall be provided with couplings, branch pipes, nozzles and other necessary fittings to comply with New Zealand Standard 4505: 1977.

4. Nozzles—(1) Nozzles shall be 12mm, 15mm or 19mm in diameter or as near thereto as possible. Dual purpose nozzles shall be capable of producing alternately, as required, either a water spray suitable for extinguishing oil fires, or a plain water jet and shall incorporate a shut off facility.

(2) Nozzles for portable air foam applicator units shall be capable of producing effective foam, suitable for extinguishing an oil fire, at the rate of at least 1.5 cubic metres per minute.

5. Fire crew outfits—(1) Fire crew outfits provided for use in any ship shall comprise personal equipment as follows:

(a) Protective clothing of material to protect the skin from the heat radiating from the fire and from burns and scalding by steam. The outer surface shall be water resistant.

(b) Boots and gloves of rubber or other electrically non-conducting material.

(c) A rigid helmet providing effective protection against impact and suitable for wearing with breathing apparatus.

(d) An electric safety lamp (hand lantern) of an approved type with a minimum burning-period of 3 hours.

(e) A fire crew axe with an electrically non-conducting handle.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu21

The Shipping (Inert Gas Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Inert Gas Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Inert Gas Systems

1. General—The system shall be capable of:

(1) Inerting empty cargo tanks including slop tanks by reducing the oxygen content of the atmosphere in each tank to a level at which combustion cannot be supported;

(2) Maintaining the atmosphere in any part of any cargo tank or slop tank at an oxygen content not exceeding 8 percent by volume and at a positive pressure at all times both in port and at sea except when it is necessary for such a tank to be gas free;

(3) Eliminating the need for air to enter a tank during normal operations except when it is necessary for such a tank to be gas free;

(4) Purging empty cargo tanks including slop tanks of hydrocarbon gas, so that subsequent gas freeing operations will at no time create a flammable atmosphere within the tank.

2. Inert gas delivery rate and content—(1) The system shall be capable of delivering inert gas to the cargo tanks and slop tanks at a rate of at least 125 percent of the maximum rate of discharge capacity of the ship expressed as a volume;

(2) The system shall be capable of delivering inert gas with an oxygen content of not more than 5 percent by volume in the inert gas supply main to the cargo tanks and slop tanks at any required rate of flow.

3. Inert gas supply—The inert gas supply may be treated flue gas from the main or auxiliary boilers, from one or more separate gas generators or other sources or from any combination thereof. The Chief Surveyor may approve systems using inert gases other than flue gas, provided the Chief Surveyor is satisfied that an equivalent standard of safety is achieved. Systems using stored carbon dioxide shall not be permitted unless the Chief Surveyor is satisfied that the risk of ignition from generation of static electricity by the system itself is minimised.

4. Isolating valves—Flue gas isolating valves shall be fitted in the inert gas supply mains between the boiler uptakes and the flue gas scrubber. These valves shall be provided with indicators to show whether they are open or shut, and precautions shall be taken to maintain them gastight and keep the seating clear of soot. Arrangements shall be made so that the boiler soot blowers cannot be operated when the corresponding flue gas valve is open.

5. Inert gas scrubbers and filters—(1) A flue gas scrubber shall be fitted which will effectively cool the volume of gas specified in clause 2 of this Performance Standard and remove solids and sulphur combustion products. The cooling water arrangements shall be such that an adequate supply of water will always be available without interfering with any essential services on the ship. Provision shall also be made for an alternative supply of cooling water.

(2) Filters or equivalent devices shall be fitted to minimise the amount of water carried over to the inert gas blowers.

(3) The scrubber shall be located aft of all cargo tanks, slop tanks, cargo pump rooms and cofferdams separating these spaces from machinery spaces of Category A.

6. Inert gas generator—(1) At least two blowers shall be fitted which together shall be capable of delivering to the cargo tanks and slop tanks, at least the volume of gas required by clause 2 of this Performance Standard. In a system provided with a gas generator, the Chief Surveyor may permit only one blower if that system is capable of delivering the total volume of gas required by clause 2 to the protected cargo tanks, provided that sufficient spares for the blower and its prime mover are carried on board to enable any failure of the blower and its prime mover to be rectified by the ship's crew.

(2) Two fuel oil pumps shall be fitted to the inert gas generator. The Chief Surveyor may permit only one fuel oil pump on condition that sufficient spares for the fuel oil pump and its prime mover are carried on board to enable any failure of the fuel oil pump and its prime mover to be rectified by the ship's crew.

(3) The inert gas system shall be so designed that the maximum pressure which it can exert on any cargo tank will not exceed the test pressure of any cargo tank. Suitable shut-off arrangements shall be provided on the suction and discharge connections of each blower. Arrangements shall be provided to enable the functioning of the inert gas plant to be stabilized before commencing cargo discharge. If the blowers are to be used for gas freeing, their air inlets shall be provided with blanking arrangements.

(4) The blowers shall be located aft of all cargo tanks, cargo pump rooms and cofferdams separating these spaces from machinery spaces of Category A.

7. Prevention of inert gas leakage—(1) The design and location of scrubber and blowers with relevant piping and fittings shall be such as to prevent flue gas leakages into enclosed spaces.

(2) To permit safe maintenance, an additional water seal or other effective means of preventing flue gas leakage shall be fitted between the flue gas isolating valves and scrubber or incorporated in the gas entry to the scrubber.

8. Regulation of inert gas—(1) A gas regulating valve shall be fitted in the inert gas supply main. This valve shall be automatically controlled to close as required in clause 18(3) and 18(4) of this Performance Standard. It shall also be capable of automatically regulating the flow of inert gas to the cargo tanks unless means are provided to automatically control the speed of the inert gas blowers required in clause 6 of this Performance Standard.

(2) The valve referred to in sub-clause (1) of this clause shall be located at the forward bulkhead of the most forward gas safe space through which the inert gas supply main passes.

9. Non-return devices—(1) At least two non-return devices, one of which shall be a water seal, shall be fitted in the inert gas supply main, in order to prevent the return of hydrocarbon vapour to the machinery spaces uptakes or to any gas safe spaces under all normal conditions of trim, list and motion of the ship. They shall be located between the automatic valve required by clause 8 of this Performance Standard and the aftermost connection to any cargo tank or cargo pipeline.

(2) The devices referred to in this paragraph shall be located in the cargo area on deck.

(3) The water seal referred to in sub-clause (1) of this clause shall be capable of being supplied by two separate pumps, each of which shall be capable of maintaining an adequate supply at all times.

(4) The arrangement of the seal and its associated provisions shall be such that it will prevent back-flow of hydrocarbon vapours and will ensure the proper functioning of the seal under operating conditions.

(5) Provision shall be made to ensure that the water seal is

protected against freezing, in such a way that the integrity of the seal is not impaired by overheating.

(6) A water loop or other arrangement approved by the Chief Surveyor shall also be fitted to all associated water supply and dry piping and all venting or pressure sensing piping leading to gas safe spaces. Means shall be provided to prevent such loops from being emptied by vacuum.

(7) The deck water seal and all loop arrangements shall be capable of preventing return of hydrocarbon vapours at a pressure equal to the test pressure of the cargo tanks.

(8) The second non-return device mentioned in sub-clause (1) of this clause shall be a non-return valve or equivalent capable of preventing the return of vapours or liquids or both and fitted forward of the deck water seal required by sub-clause (1) of this clause. It shall be provided with either positive means of closure or an additional valve having such means of closure located forward of the non-return valve to isolate the deck water seal from the inert gas main to the cargo tanks and slop tanks.

(9) As an additional safeguard against the possible leakage of hydrocarbon liquids or vapours back from the deck main, means shall be provided to permit the section of the line between the valve having positive means of closure referred to in sub-clause (8) of this paragraph, and the valve referred to in clause 8 of this Performance Standard to be vented in a safe manner when the first of these valves is closed.

10. Piping and distribution arrangements—(1) The inert gas main may be divided into two or more branches forward of the non-return devices required by clause 9 of this Performance Standard.

(2) (a) The inert gas supply main shall be fitted with branch piping leading to each cargo tank and slop tank. Branch piping for inert gas shall be fitted with either stop valves or equivalent means of control for isolating each tank. Where stop valves are fitted, they shall be provided with locking arrangements, which shall be under the control of a responsible ship's officer.

(b) In combination carriers, the arrangements to isolate the slop tanks containing oil or oil residues from other tanks shall consist of blank flanges which will remain in position at all times when cargoes other than oil are being carried except as provided for in the relevant section of the Guidelines on Inert Gas Systems.

(3) Means shall be provided to protect cargo tanks and slop tanks against the effect of overpressure or vacuum caused by thermal variations when such tanks are isolated from the inert gas main.

(4) Piping systems shall be so designed as to prevent the accumulation of cargo or water in the pipelines under all normal conditions.

(5) Suitable arrangements shall be provided to enable the inert gas main to be connected to an external supply of inert gas.

11. Ventilation of vapours displaced from cargo tanks—The arrangements for the venting of all vapours displaced from the cargo tanks during loading or ballasting shall comply with the provisions of the Codes of Practice issued under The Shipping (Construction) Regulations 1989 and shall consist of either one or more mast risers, or a number of high velocity vents. The inert gas supply main may be used for such venting.

12. Arrangement for inerting, purging or gas freeing of empty tanks—The arrangements for inerting, purging or gas freeing of empty tanks as required in clause 1 of this Performance Standard shall be approved by the Chief Surveyor and shall be such that the accumulation or hydrocarbon vapours in pockets formed by the internal structural members in a tank is minimised and that:

(1) On individual cargo tanks or slop tanks the gas outlet pipe, if fitted, shall be positioned as far as practicable from the inert gas/air inlet and in accordance with the provisions of the

Codes of Practice issued under The Shipping (Construction) Regulations 1989. The inlet of such outlet pipes may be located at either deck level or at not more than 1 metre above the bottom of the tank;

(2) The cross sectional area of such a gas outlet pipe referred to in sub-clause (1) of this clause shall be such that an exit velocity of at least 20 metres per second can be maintained when any three tanks are being simultaneously supplied with inert gas. Their outlets shall extend not less than 2 metres above deck level;

(3) Each gas outlet referred to in sub-clause (2) of this clause shall be fitted with suitable blanking arrangements;

(4) (a) If a connection is fitted between the inert gas supply main and the cargo piping system, arrangements shall be made to ensure an effective isolation having regard to the high pressure difference which may exist between the systems. This shall consist of two shut-off valves with an arrangement to vent the space between the valves in a safe manner or an arrangement consisting of a spool-piece with associated blanks;

(b) The valve separating the inert gas supply main from the cargo main shall be a non-return valve with a positive means of closure.

13. Pressure relief and vacuum breaking devices—(1) One or more pressure-vacuum breaking devices shall be provided to prevent the cargo tanks from being subject to:

(a) A positive pressure in excess of the test pressure of the cargo tank if the cargo were to be loaded at the maximum rated capacity and all other outlets were left shut; and

(b) A negative pressure in excess of 700 millimetres water gauge if cargo were to be discharged at the maximum rated capacity of the cargo pumps and the inert gas blower were to fail.

Such devices shall be installed on the inert gas main unless they are installed in the venting system required by the Codes of Practice issued under The Shipping (Construction) Regulations 1989 or on individual cargo tanks.

(2) The location and design of the devices referred to in sub-clause (1) of this clause shall be in accordance with the provisions of the Codes of Practice issued under The Shipping (Construction) Regulations 1989.

14. Temperature measurement—Means shall be provided for continuously indicating the temperature and pressure of the inert gas at the discharge side of the gas blowers, whenever those gas blowers are operating.

15. Instrumentation (permanent)—(1) Instrumentation shall be fitted for continuously indicating and permanently recording when the inert gas is being supplied:

(a) The pressure of the inert gas supply main forward of the non-return devices required by sub-clause (1) of clause 9 of this Performance Standard and

(b) The oxygen content of the inert gas in the inert gas main on the discharge side of the gas blowers.

(2) The devices referred to in sub-clause (1) of this clause shall be placed in the cargo control room where provided. Where no cargo control room is provided, they shall be placed in a position easily accessible to the officer in charge of cargo operations.

(3) In addition, meters shall be fitted:

(a) In the navigating bridge, to indicate at all times the pressure referred to in sub-clause (1)(a) of this clause and the pressure in the slop tanks of combination carriers, whenever those tanks are isolated from the inert gas supply main; and

(b) In the machinery control room or in the machinery space, to indicate the oxygen content referred to in sub-clause (1)(b) of this clause.

16. Instrumentation (portable)—Portable instruments for

measuring oxygen and flammable vapour concentration shall be provided. In addition, suitable arrangements shall be made on each cargo tank and slop tank such that the condition of the tank atmosphere can be determined using these portable instruments.

17. Calibration—Suitable means shall be provided for the zero and span calibration of both fixed and portable gas concentration measurement instruments, referred to in paragraphs 15 and 16 of this Performance Standard.

18. Alarms—(1) Audible and visual alarms shall be provided to indicate:

(a) Low water pressure or low water flow rate to the flue gas scrubber referred to in sub-clause 5(1) of this Performance Standard;

(b) High water level in the flue gas scrubber referred to in sub-clause 5(1) of this Performance Standard;

(c) High gas temperature referred to in clause 14 of this Performance Standard;

(d) Failure of the inert gas blowers referred to in clause 6(1) of this Performance Standard;

(e) Oxygen content in excess of 8 percent volume referred to in sub-clause 15(1)(b) of this Performance Standard;

(f) Failure of the power supply to the automatic control system for the gas regulating valve and to the indicating devices referred to in clause 8 and sub-clause 15(1) respectively of this Performance Standard;

(g) Low water level in the water seal referred to in sub-clause 9(1) of this Performance Standard;

(h) Gas pressure less than 100 millimetres water gauge as referred to in sub-clause 15(1)(a) of this Performance Standard the alarm arrangement for this gas pressure shall be such as to ensure that the pressure in slop tanks in combination carriers can be monitored at all times; and

(i) High gas pressure referred to in sub-clause 15(1)(a) of this Performance Standard.

(2) In a system with gas generators, audible and visual alarms shall be provided in accordance with sub-clause 18(1)(a), 18(1)(c), 18(1)(e) and 18(1)(i) of this clause and additional alarms to indicate.

(a) Insufficient fuel oil supply;

(b) Failure of the power supply to the generator;

(c) Failure of the power supply to the automatic control system for the generator.

(3) Automatic shut down of the inert gas blowers and gas regulating valve shall be arranged on predetermined limits being reached in respect of sub-clause (1)(a), (1)(b) and (1)(c) of this clause.

(4) Automatic shut down of the gas regulating valve shall be arranged so as to take account of the failure of the inert gas blowers referred to in clause 6 of this Performance Standard.

(5) In relation to sub-clause (1)(e) of this clause, when the oxygen content of the inert gas exceeds 8 percent, immediate action shall be taken to reduce the oxygen level. Unless the quality of the gas improves, all in-tank operations shall be suspended so as to avoid air being drawn into the tanks and the isolation valve referred to in sub-clause 9(8), of this Performance Standard shall be closed.

(6) The alarms required in sub-clause (1)(e), (1)(f) and (1)(h) of this clause shall be fitted in the machinery space and cargo control room, where provided, but in any event in such a position that they are immediately received by responsible members of the crew.

(7) In relation to sub-clause (1)(g) of this clause the Chief Surveyor shall be satisfied as to the maintenance of an adequate reserve of water at all times and the integrity of the arrangements to permit the automatic formation of the water seal when the gas flow ceases. The audible and visual alarm on

the low level of water in the water seal shall operate when the inert gas is not being supplied.

(8) An audible alarm system, independent of that required in sub-clause (1)(h) of this clause, or automatic shut down of cargo pumps shall be provided to operate on predetermined limits of low pressure in the inert gas main being reached.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

v6

The Shipping (Breathing Apparatus) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Breathing Apparatus) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Breathing Apparatus

1. Smoke helmet and smoke mask—Every smoke helmet or smoke mask shall be provided with a hose for the supply of air from the outside atmosphere. An air pump or bellows shall be provided, which shall be suitable for pumping air through the hose. The hose shall be of the non-collapsing type. Efficient couplings shall be provided to permit 2 or more lengths of hose to be joined. The air inlet to the pump or bellows shall be so protected as to ensure that the supply of air cannot be obstructed.

2. Self-contained breathing apparatus—(1) Self-contained breathing apparatus shall be of the open-circuit compressed-air type.

(2) The storage capacity of the compressed air cylinder or cylinders attached to the apparatus and carried by the wearer shall be at least 1200 litres of free air. The storage cylinders shall be constructed of suitable material, and shall be of efficient design and of sufficient strength to withstand with an adequate factor of safety the internal air pressure to which they may be subjected, and each cylinder shall be capable of withstanding a test by hydraulic pressure suitably in excess of the maximum working pressure.

(3) Means shall be provided for the automatic regulation of the air supply to the wearer of the apparatus in accordance with his breathing requirements when he is breathing any volume of free air of up to 85 litres per minute at any time when the pressure in the supply cylinder or cylinders is above 1000 kPa. Means shall be provided for overriding the automatic air supply valve.

(4) A pressure gauge with an anti-bursting orifice shall be incorporated in the high-pressure air-supply system to enable the wearer to read directly and easily the pressure of air in the supply cylinder or cylinders.

(5) Means shall be provided for warning the wearer audibly when 80 percent of the usable capacity of the apparatus has been expended.

(6) The maximum weight of any such apparatus shall not exceed 16 kg, excluding any lifeline, and, if they do not form an integral part of the apparatus, any safety bolt or harness.

3. General—(1) Every breathing apparatus shall be constructed of materials having adequate mechanical strength, durability, and resistance to deterioration by heat or by contact with water, and such materials shall be resistant to fire and

shall not allow the breathing circuit to be penetrated by smoke or chemical fumes likely to be encountered in service. The fabric used in the construction of any harness provided with such apparatus shall be resistant to shrinkage. Exposed metal parts of the apparatus, harness and fittings shall be of materials so far as practicable resistant to frictional sparking.

(2) The following equipment shall be provided for use with each set of breathing apparatus:

(a) a fire-proof life-and-signalling-line at least 3m longer than is required to reach from the open deck in clean air, well clear of any hatch or doorway, to any part of the accommodation, service, cargo, or machinery spaces. The line shall be made of copper or galvanised steel wire rope having a breaking strength of at least 500 kg and shall be overlaid up to at least 10mm in diameter by hemp or other covering to provide a surface which can be firmly gripped when wet;

(b) An adjustable safety belt or harness to which that line shall be capable of being securely attached and detached by the wearer by means of a snap-hook;

(c) Means for protecting the eyes and face of the wearer against smoke;

(d) Plates of suitable non-flammable material bearing a clearly legible code of signals to be used between the wearer and his attendant, one of which shall be attached to the safety belt or harness and other attached to the free end of the life-line;

(e) (For every apparatus other than a smoke helmet), a lightweight safety helmet with lining and adjustable head-band.

(3) Every breathing apparatus shall be clearly marked with the name of the maker or vendor and the year of manufacture. Operating instructions in clear and permanent lettering shall be affixed to such apparatus.

(4) Every self-contained breathing apparatus shall be provided with fully charged spare cylinders having a spare storage capacity of at least 2,400 litres of free air except that:

(a) If the ship is carrying 5 sets or more of such apparatus, the total spare storage capacity of free air shall not be required to exceed 9,600 litres; or

(b) If the ship is equipped with means for recharging the air cylinders to full pressure with air free from contamination, the spare storage-capacity of the fully charged spare cylinders of each such apparatus shall be of at least 1,200 litres of free air, and the total spare storage-capacity of free air provided in the ship shall not be required to exceed 4,800 litres.

(5) A servicing and instruction manual shall be kept with each such apparatus.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu16

The Shipping (Automatic Sprinkler, Fire Detection and Fire Alarm Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Automatic Sprinkler, Fire Detection, and Fire Alarm Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Automatic Sprinkler Fire Detection and Fire Alarm Systems

1. General—(1) Every automatic sprinkler, fire detection and fire alarm system shall be capable of immediate operation at all times and no action by the crew shall be necessary to set it in operation. It shall be of the wet pipe type but small exposed sections may be of the dry pipe type where in the opinion of the Chief Surveyor this is a necessary precaution. Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing. The system shall be kept charged at the necessary pressure and shall have provision for a continuous supply of water as required in this Performance Standard.

(2) (a) Each section of sprinklers shall include means for giving a visual and audible alarm signal automatically at one or more indicating units whenever any sprinkler comes into operation. Such alarm systems shall be such as to indicate if any fault occurs in the system.

(b) In passenger ships such units shall give an indication of any fire and its location in any space served by the system and shall be centralised on the navigating bridge or in the main fire control station, which shall be so manned or equipped as to ensure that any alarm from the system is immediately received by a responsible member of the crew.

(c) In cargo ships such units shall indicate in which section served by the system fire has occurred and shall be centralised on the navigating bridge and in addition, visible and audible alarms from the unit shall be placed in a position other than on the navigating bridge, so as to ensure that the indication of fire is immediately received by the crew.

2. Sprinkler—(1) Sprinklers shall be grouped into separate sections, each of which shall contain not more than 200 sprinklers. In passenger ships any section of sprinklers shall not serve more than two decks and shall not be situated in more than one main vertical zone. However, the Chief Surveyor may permit such a section of sprinklers to serve more than two decks or be situated in more than one main vertical zone, if he is satisfied that the protection of the ship against fire will not thereby be reduced.

(2) Each section of sprinklers shall be capable of being isolated by one stop valve only. The stop valve in each section shall be readily accessible and its location shall be clearly and permanently indicated. Means shall be provided to prevent the operation of the stop valves by any unauthorised person.

(3) A gauge indicating the pressure in the system shall be provided at each section stop valve and at a central station.

(4) The sprinklers shall be resistant to corrosion by marine atmosphere. In accommodation and service spaces the sprinklers shall come into operation within the temperature range from 68°C to 79°C, except that in locations such as drying rooms, where high ambient temperatures might be expected the operating temperature may be increased by not more than 30°C above the maximum deckhead temperature.

(5) A list or plan shall be displayed at each indicating unit showing the spaces covered and the location of the zone in respect of each section. Suitable instructions for testing and maintenance shall be available.

(6) Sprinklers shall be placed in an overhead position and spaced in a suitable pattern to maintain an average application rate of not less than 5 litres per square meter per minute over the nominal area covered by the sprinklers. Alternative distribution arrangements or sprinklers providing other amounts of water may be permitted providing the arrangements are not less effective.

(7) Sprinklers shall be spaced not more than 4 metres apart and not more than 2 metres from a bulkhead. They shall be placed as clear as possible of beams or other objects likely to obstruct the projections of water and in such positions that

combustible material in the space concerned will be well sprayed.

(8) At least 6 spare sprinklers shall be provided for each section.

3. Pressure tank—(1) A pressure tank having a volume equal to at least twice that of the charge of water specified in this sub-paragraph shall be provided. The tanks shall contain a standing charge of fresh water, equivalent to the amount of water which would be discharged in one minute by the pump referred to in clause 4(2) of this Performance Standard and the arrangements shall provide for maintaining an air pressure in the tank such as to ensure that where the standing charge of fresh water in the tank has been used the pressure will be not less than the working pressure of the sprinkler, plus the pressure exerted by a head of water measured from the bottom of the tank to the highest sprinkler in the system. Suitable means of replenishing the air under pressure and of replenishing the fresh water charge in the tank shall be provided.

(2) The pressure tank shall be fitted with an efficient relief valve and with a water gauge glass and a pressure gauge. Stop valves or cocks shall be provided at each gauge connection. Means shall be provided to prevent the inadvertent admission of sea water into the tank.

4. Pumps and piping—(1) An independent power pump shall be provided solely for the purpose of continuing automatically the discharge of water from the sprinklers. The pump shall be brought into action automatically by the pressure drop in the system before the standing fresh water charge in the pressure tank is completely exhausted.

(2) The pump and the piping system shall be capable of

maintaining the necessary pressure at the level of the highest sprinkler to ensure a continuous output of water sufficient for the simultaneous coverage of a minimum area of 280 square metres at the application rate specified in clause 2(6) of this Performance Standard.

(3) The pump shall have fitted on the delivery side a test valve with a short open ended discharge pipe. The effective area through the valve and pipe shall be adequate to permit the release of the required pump output while maintaining the pressure in the system specified in clause 3(1) of this Performance Standard.

(4) The pump shall have a suction direct from the sea which shall be independent of any other suction and which shall be in the space containing the pump. The sea inlet to the pump shall be so arranged that when the ship is afloat it will not be necessary to shut off the supply of sea water to the pump for any purpose other than the inspection or repair of the pump.

5. Pump and tank position—The sprinkler pump and tank shall be situated in a position reasonably remote from any machinery space of Category A and shall not be situated in any space required to be protected by the sprinkler system.

6. Power supply—(1) Not less than two sources of power supply for the sprinkler pump, air compressor and automatic alarm and detection system shall be provided in passenger ships. Where the sources of power are electrical one shall be an emergency source. One supply for the pump shall be taken from the main switchboard and one from the emergency switchboard by separate feeders reserved solely for that purpose. The feeders shall be arranged so as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except insofar as it is necessary to reach the appropriate switchboards and shall be run to an automatic changeover switch situated near the sprinkler pump. This switch shall permit the supply of power from the main switchboard so long as a supply is available therefrom, and be so designed that upon failure of that supply it will automatically change over to the supply from the emergency switchboard. The switches on

the main and emergency switchboards shall be clearly labelled and normally kept closed. No other switch shall be permitted in the feeders concerned. One of the sources of power supply for the alarm and detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion type engine it shall, in addition to complying with the provisions of clause 5 of this Performance Standard be so situated that a fire in any protected space will not affect the air supply to the machinery.

(2) In cargo ships there shall not be less than two sources of power supply for the sea water pump and automatic alarm and detection system. If the pump is electrically driven it shall be connected to the main source of electrical power, which shall be capable of being supplied by at least two generators. The feeders shall be so arranged as to avoid galleys, machinery spaces and other enclosed spaces of high fire risk except insofar as it is necessary to reach the appropriate switchboards. One of the sources of power supply for the alarm and detection system shall be an emergency source. Where one of the sources of power for the pump is an internal combustion engine it shall, in addition to complying with the provisions of paragraph 5 of this Performance Standard be so situated that a fire in any protected space will not affect the air supply to the machinery.

7. Sprinkler-fire main connection and shore supply—Every sprinkler system shall have a connection from the ship's fire main provided with a screw down valve and non return valve at the connection which will prevent a back flow from the sprinkler system to the fire main. In addition, there may be fitted hose couplings with shut off valves and non-return valves situated close to the couplings for the purpose of coupling to a shore supply, but no other external connection shall be fitted. The sprinkler system shall be a self contained unit. Shut off valves for the shore supply and the ship's fire mains connections shall be clearly and permanently marked to show their purpose and shall be capable of being locked in the closed position.

8. Testing of systems—(1) A test valve shall be provided for testing the automatic alarm for each section of sprinklers by a discharge of water equivalent to the operation of one sprinkler. The test valve for each section shall be situated near the stop valve for that section.

(2) Means shall be provided for testing the automatic operation of the pump on reduction of pressure in the system.

(3) Switches shall be provided at one of the indicating positions referred to in clause 1(2)(a) of this Performance Standard which will enable the alarm and the indicators for each section of sprinklers to be tested.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.
lu17

The Shipping (Fixed Pressure Water Spraying Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Fixed Pressure Water Spraying Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule**Performance Standard for Fixed Pressure Water Spraying Systems****PART I****Fixed Pressure Water Spraying Systems for Machinery Spaces and Cargo Pump Rooms**

1. General—Every fixed pressure water spraying system shall be provided with a pump, piping system, control valves and spraying nozzles. The pump provided for machinery space protection shall not be used for any other purpose except that the Chief Surveyor may permit the pump to be used for supplying cargo pump room or cargo space water spraying systems where such systems are permitted. For cargo pump room protection the water supply may be from the ship's main fire pumps provided such pumps comply with the requirements of this Performance Standard.

2. Spraying nozzles—(1) The spraying nozzles shall be of such a type, sufficient in number and so arranged as to ensure an effective average distribution of water in accordance with the following table:

Protected Area	Application Rate Litres per sq. metre/min
Boiler fronts or roof firing areas, oil fuel units, centrifugal separators (not oily water separators), oil fuel purifiers and clarifiers.	20
Hot oil fuel pipes near exhaust pipes or similar heated surfaces or main or auxiliary diesel engines.	10
Tank top areas and oil tanks not forming part of the ship's structure.	5
Cargo pump rooms.	10

(2) Spraying nozzles shall be fitted above bilges, tank tops and other areas over which oil fuel is liable to spread and above other main fire hazards in the spaces to be protected.

(3) Means shall be provided which will prevent nozzles from becoming clogged by impurities in the water or corrosion of piping, nozzles, valves and pumps.

3. System distribution and control—The water spraying system may be divided into sections and shall be controlled from distribution manifolds the valves of which shall be capable of being operated from easily accessible positions outside the spaces to be protected and which will not be readily cut off by an outbreak of fire within the protected space.

4. Pumps and piping—(1) The water spraying system shall be kept charged at the necessary pressure and the pump supplying the water for the system shall be automatically put into action by a pressure drop in the system.

(2) The pump may be driven by independent internal combustion type machinery but if it is dependent upon power being supplied from the emergency generator fitted in compliance with the provisions of the Codes of Practice issued under The Shipping (Construction) Regulations 1989 the generator shall be arranged to start automatically in case of main power failure so that power for the pump is immediately available. When the pump is driven by independent internal combustion type machinery it shall be so situated that a fire in the protected space will not affect the air supply to the machinery and the pump compartment.

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

5. Miscellaneous—No part of the water spraying system shall be situated forward of the collision bulkhead in any passenger ship.

PART II**Fixed Pressure Water Spraying Systems for Cargo Spaces**

6. General—Every fixed pressure water spraying system shall be provided with a pump, piping system, control valves and spraying nozzles.

7. Spraying nozzles—(1) The nozzles shall be of an approved full bore type and shall be arranged so as to secure an effective distribution of water in the spaces which are to be protected.

(2) The system shall be such as will provide water application at a rate of at least 3.5 litres per square metre per minute for spaces with a deck height not greater than 2.5 metres and at least 5 litres per square metre per minute for spaces with a deck height greater than 2.5 metres.

(3) Precautions shall be taken to prevent the nozzles from becoming clogged by impurities in the water.

8. System distribution and control—(1) The system shall cover the full breadth of the protected space except that in ships where the protected space is subdivided with longitudinal Class "A" divisions the breadth of the sections may be reduced accordingly. In ships of Classes I, or VII and in ships of Classes II or VIII of 76 metres or over in length or where the length of the enclosed part of the protected space is 50 metres or over, the system may be divided into sections provided they are at least 20 metres in length. In ships of other classes the length of a section may be less than 20 metres but shall be not less than 10 metres provided the capacity of the pumps are capable of supplying the two largest adjacent sections simultaneously at the application rate referred to in clause 7(2) of this Performance Standard.

(2) The distribution valves for the system shall be situated in an easily accessible position adjacent to, but outside, the space to be protected which will not readily be cut off by a fire within the space. Direct access to the distribution valves from the protected spaces and from outside the spaces shall be provided. Adequate ventilation shall be fitted in the space containing the distribution valves.

9. Pumps and piping—(1) The water supply to the system shall be provided by a pump or pumps, other than the ship's required fire pumps which shall additionally be connected to the system by a lockable non-return valve which will prevent a back flow from the system into the fire main.

(2) The principal pump or pumps shall be capable of supplying simultaneously, at all times, at the required pressure all nozzles in the protected spaces, or two adjacent sections if this is less, a quantity of water in accordance with clause 7(1) and 7(2) of this Performance Standard.

(3) The principal pump or pumps shall be capable of being brought into operation by remote control, which may be manually activated, from the position at which the distribution valves are situated.

(4) In ships of Class I and in ships of Class II of 76 metres or over in length or where the length of the enclosed part of the protected space is 50 metres or over the principal pump or pumps shall be situated in a position reasonably remote from the protected space and from any machinery space of Category A. In ships of other Classes the principal pump or pumps shall be situated outside the protected space but may be situated within any machinery space.

(5) In ships of Class I and in ships of Class II of 76 metres or over in length or where the length of the enclosed part of the protected space is 50 metres or over, if the principal pump or pumps are electrically driven there shall be two sources of power, one of which shall be the emergency generator. In ships of other Classes there shall be two sources of power which may be two of the auxiliary generators provided they are independently driven. If the principal pump or pumps are driven by independent internal combustion type machinery they shall be so situated that a fire in the protected space will

not affect the air supply to the machinery and the pump compartment.

(6) When a fixed pressure water spraying system is provided for the machinery spaces in accordance with the Part 1 of this Performance Standard. The pump required for that system may also be used for the purpose of complying with this Part of the Performance Standard.

(7) The sea suction of the pump shall be so arranged that, when the ship is afloat, it will not be necessary to shut off the supply of sea water to the pump for any purpose other than the inspection or repair of the pump.

(8) The pump suction and discharge valves and any other valves requiring to be operated to bring the pump into operation shall be locked open or be operable from any control position of the system. A pressure gauge shall be provided at such control positions to show when water is available.

(9) A waste valve with a short open ended pipe shall be fitted between the pump discharge and section control valves for testing purposes.

(10) The pipes of the system shall be solid drawn or welded steel or equivalent and they shall be hydraulically tested by the manufacturers to twice the working pressure but not less than 20 bar (2N/mm²) and be galvanised internally to prevent corrosion.

(11) Fittings such as self aligning swivel joints and flexible pipes situated within the protected space shall not be readily rendered ineffective by heat and where such fittings are used at least one spare of each type fitted shall be carried.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu18

The Shipping (Sample Extraction Smoke Detection Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Sample Extraction Smoke Detection Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Sample Extraction Smoke Detection Systems

1. General requirements—(1) Wherever in the text of this Performance Standard the word "system" appears, it shall mean "sample extraction smoke detection system".

(2) Any required system shall be capable of continuous operation, at all times except that systems operating on a sequential scanning principle may be accepted, provided that the interval between scanning the same position twice gives an overall response time to the satisfaction of the Chief Surveyor.

(3) Power supplies necessary for the operation of the system shall be monitored for loss of power. Occurrence of loss of power shall initiate a visual and audible signal at the control panel and the navigating bridge which shall be distinct from a signal indicating smoke detection.

(4) An alternative power supply for the electrical equipment used in the operation of the system shall be provided.

(5) The control panel shall be located on the navigating bridge or in the main fire control station.

(6) The detection of smoke or other products of combustion shall initiate a visual and audible signal at the control panel and the navigating bridge.

(7) Clear information shall be displayed on or adjacent to the control panel designating the spaces covered.

(8) The sampling pipe arrangements shall be such that the location of the fire can be readily identified.

(9) Suitable instructions and spare components shall be provided for the testing and maintenance of the system.

(10) The function of the system shall be periodically tested to the satisfaction of the Chief Surveyor. The system shall be of a type that can be tested for correct operation and restored to normal surveillance without the renewal of any component.

(11) The system shall be designed, constructed and installed so as to prevent the leakage of any toxic or flammable substances or fire extinguishing medium into any accommodation space, service space, control station or machinery space.

2. Installation requirements—(1) At least one smoke accumulator shall be located in every enclosed space for which smoke detection is required. However, where a space is designed to carry oil or refrigerated cargo alternatively with cargoes for which a smoke sampling system is required, means may be provided to isolate the smoke accumulators in such compartments from the system. Such means shall be to the satisfaction of the Chief Surveyor.

(2) Smoke accumulators shall be located for optimum performance and shall be spaced so that no part of the overhead deck area is more than 12 metres measured horizontally from an accumulator. Where systems are used in spaces which may be mechanically ventilated, the position of the smoke accumulators shall be considered having regard to the effects of ventilation.

(3) Smoke accumulators shall be positioned where impact or physical damage is unlikely to occur.

(4) Not more than four accumulators shall be connected to each sampling point.

(5) Smoke accumulators from more than one enclosed space shall not be connected to the same sampling point.

(6) Sampling pipes shall be self-draining and suitably protected from impact or damage from cargo working.

3. Design requirements—(1) The system and equipment shall be suitably designed to withstand supply voltage variations and transients, ambient temperature changes, vibration, humidity, shock, impact and corrosion normally encountered in ships and to avoid the possibility of ignition of flammable gas/air mixtures.

(2) The sensing unit shall be certified to operate before the smoke density within the sensing chamber exceeds 6.65 percent obscuration per metre.

(3) Duplicate sample extraction fans shall be provided. The fans shall be of sufficient capacity to operate with the normal conditions of ventilation in the protected areas and shall give an overall response time to the satisfaction of the Chief Surveyor.

(4) The control panel shall permit observation of smoke in the individual sampling pipe.

(5) Means shall be provided to monitor the airflow through the sampling pipes and to ensure that as far as practicable equal quantities are extracted from each interconnected accumulator.

(6) Sampling pipes shall be a minimum of 12 millimetres internal diameter except when used in conjunction with fixed gas fire extinguishing systems when the minimum size of pipe should be sufficient to permit the fire extinguishing gas to be discharged within the appropriate time.

(7) Sampling pipes shall be provided with an arrangement for periodically purging with compressed air.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu19

The Shipping (Portable Foam Applicator Units) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Portable Foam Applicator Units) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Portable Foam Applicator Units

1. Every portable foam applicator unit shall be provided with:

(1) an induction type of air foam nozzle capable of being connected to the fire main by means of a fire hose;

(2) a portable tank containing at least 20 litres of foam concentrate from which the nozzle specified at sub-paragraph (1) of this paragraph can induce the contents;

(3) a spare tank identical to that specified at sub-paragraph (2) of this paragraph.

2. The nozzle whilst being supplied at the minimum hydrant pressure on the ship permitted by the Codes of Practice issued under the Shipping (Fire Appliances) Regulations 1989 (Codes of Practice) shall be capable of producing effective foam suitable for extinguishing an oil fire at the rate of at least 1.5 cubic metres per minute.

3. The ratio of the volume of foam produced to the volume of foam solution shall not exceed 12 to 1.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu20

The Shipping (Fixed Gas Fire Extinguishing Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Fixed Gas Fire Extinguishing Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Fixed Gas Fire Extinguishing Systems

1. General—(1) Fire extinguishing systems shall not contain an extinguishing medium which either itself or under expected

conditions of use gives off toxic gases in such quantities as to endanger personnel.

(2) (a) In every such system provided for the injection of fire extinguishing medium into any compartment for fire extinguishing purposes, the pipes for conveying the medium shall be provided with control valves or cocks which shall be so placed that they will be easily accessible and not readily cut off from use by an outbreak of fire within the protected compartment. Such control valves or cocks shall be permanently marked to indicate clearly the compartments to which the pipes are led.

(b) Where cargo spaces fitted with a gas extinguishing system for fire protection are used as passenger spaces the extinguishing connection shall be blanked during service as a passenger space.

(c) Suitable provisions shall be made to prevent inadvertent admission of the medium to any compartment.

(3) The piping for the distribution of fire extinguishing medium shall be arranged and discharge nozzles so positioned that uniform distribution of medium is obtained.

(4) Means shall be provided to close all openings which may admit air to or allow gas to escape from a protected space.

(5) Where the volume of free air contained in air receivers in any space is such that, if released in such space in the event of fire, such release of air within that space would seriously affect the efficiency of the fixed fire extinguishing system, an additional quantity of fire extinguishing medium shall be provided.

(6) Means shall be provided for automatically giving audible warning of the release of fire extinguishing medium into any space in which personnel normally work or to which they have access. The alarm shall operate for a suitable period before the medium is released.

(7) The means of control of any fixed gas fire extinguishing system shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in a protected space. At each location there shall be clear instructions relating to the operation of the system having regard to the safety of personnel.

(8) Automatic release of fire extinguishing medium shall not be permitted except as provided by clause 3(1)(e) and in respect of local automatically operated units referred to in clause 3(2) and 3(3) of this Performance Standard.

(9) Where the quantity of extinguishing medium is required to protect more than one space, the quantity of medium available need not be more than the largest quantity required for any one space so protected.

(10) Except as otherwise permitted by clause 3(1), 3(2) and 3(3) of this Performance Standard, pressure containers required for the storage of fire extinguishing medium shall be located outside protected spaces in accordance with clause 1(12) of this Performance Standard.

(11) The storage containers and associated pressure components shall be constructed of suitable material and shall be of efficient design and sufficient strength having regard to their locations and maximum ambient temperatures expected in service.

(12) When the fire extinguishing medium is stored outside a protected space, it shall be stored in a room which shall be situated in a safe and readily accessible position and shall be effectively ventilated to the satisfaction of the Chief Surveyor. Any entrance to such a storage room shall be from the open deck and in any case shall be independent of the protected space. Access doors shall open outwards, and bulkheads and decks including doors and other means of closing any opening therein, which form the boundaries between such rooms and adjoining enclosed spaces shall be gastight. For the purpose of the application of the integrity tables in the Codes of Practice

issued under The Shipping (Construction) Regulations 1989 such storage rooms shall be treated as control stations.

(13) Spare parts for the system shall be stored on board and be to the satisfaction of the Chief Surveyor.

2. Carbon dioxide systems—(1) When carbon dioxide is used as the extinguishing medium in cargo spaces, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 30 percent of the gross volume of the largest cargo compartment in the ship which is capable of being sealed.

(2) When carbon dioxide is used as the extinguishing medium in cargo spaces containing motor vehicles with fuel in their tanks for their own propulsion or in closed ro-ro spaces or closed ro-ro spaces used for bulk stowage or cargo, the quantity of gas available shall be sufficient to give a minimum volume of free gas equal to 45 percent of the gross volume of the largest such cargo space which is capable of being effectively sealed.

(3) When carbon dioxide is used as an extinguishing medium for machinery spaces or pump rooms, the quantity of gas available shall be sufficient to give a minimum of free gas equal to the larger of the following quantities, either

(a) 40 percent of the gross volume of the largest space, such volume being measured up to the level at which the horizontal area of the casing is 40 percent or less of the gross area of such space measured midway between the tank top and the lowest part of the casing; or

(b) 35 percent of the gross volume of the largest space including the casing:

Provided that the aforesaid percentages may be reduced to 35 percent and 30 percent respectively for ships of under 2,000 gross tonnage, not being passenger ships, provided also that if two or more machinery spaces are not entirely separate they shall be considered as forming one space.

(4) The volume of carbon dioxide shall be calculated at 0.56 cubic metre per kilogramme.

(5) (a) When carbon dioxide is used as the extinguishing medium for machinery spaces or pump rooms the arrangements shall be such that 85 percent of the gas required to provide the concentration referred to in clause 2(3) of this Performance Standard when applied to the space concerned can be discharged into that space within two minutes.

(b) When carbon dioxide is used as the extinguishing medium in cargo spaces containing motor vehicles with fuel in their tanks for their own propulsion or in closed ro-ro spaces the arrangements shall be such as to ensure that at least two thirds of the gas required for the space can be introduced within 10 minutes.

(6) Safe means shall be provided for the crew to check the quantity of medium within the containers.

3. Other gas systems—(1) Where gas other than carbon dioxide is produced on the ship and is used as an extinguishing medium, it shall be a gaseous product of fuel combustion in which the oxygen content, the carbon monoxide content, the corrosive elements and any solid combustible elements have been reduced to a permissible minimum. Any system using such gas shall afford equivalent protection to that provided by a fixed carbon dioxide system.

(2) When a system producing inert gas is used to provide extinguishing gas in a fixed fire extinguishing system for cargo spaces, except cargo oil tanks, in compliance with the Codes of Practice issued under the The Shipping (Fire Appliances) Regulations 1989 it shall be capable of producing hourly a volume of free gas at least equal to 25 percent of the gross volume of the largest compartment protected in this way for a period of 72 hours.

(3) No part of the control, storage or generating arrangement of any fixed fire extinguishing system shall be situated forward of the collision bulkhead in any passenger ship.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu23

The Shipping (Fixed Foam Fire Extinguishing Systems) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Fixed Foam Fire Extinguishing Systems) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standard prescribed—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Fixed Foam Fire Extinguishing Systems

PART I

Fixed High-Expansion Foam Fire-Extinguishing Systems in Machinery Spaces

1. (1) Any required fixed high-expansion foam system in machinery spaces shall be capable of rapidly discharging through fixed discharge outlets a quantity of foam sufficient to fill the greatest space to be protected at a rate of at least 1m in depth per minute. The quantity of foam-forming liquid available shall be sufficient to produce a volume of foam equal to 5 times the volume of the largest space to be protected. The expansion ratio of the foam shall not exceed 1,000 to 1.

(2) The Chief Surveyor may permit alternative arrangements and discharge rates provided that the Chief Surveyor is satisfied that equivalent protection is achieved.

2. Supply ducts for delivering foam, air intakes to the foam generator and the number of foam-producing units shall in the opinion of the Chief Surveyor be such as will provide effective foam production and distribution.

3. The arrangement of the foam generator delivery ducting shall be such that a fire in the protected space will not affect the foam generating equipment.

4. The foam generator, its sources of power supply, foam-forming liquid and means of controlling the system shall be readily accessible and simple to operate and shall be grouped in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

PART 2

Fixed Low-Expansion Foam Fire-Extinguishing Systems in Machinery Spaces

5. Where in any machinery space a fixed low-expansion foam fire-extinguishing system is fitted in addition to the requirements of the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 such a system shall be capable of discharging through fixed discharge outlets in not more than 5 minutes a quantity of foam sufficient to cover to a depth of 150mm the largest single area over which oil fuel is liable to spread. The system shall be capable of generating foam suitable for extinguishing oil fires. Means shall be provided for effective distribution of the foam through a permanent system of piping and control valves or cocks to suitable discharge outlets, and for the foam to be effectively directed by fixed sprayers on other main fire hazards in the

protected space. The expansion ratio of the foam shall not exceed 12 to 1.

6. The means of control of any such systems shall be readily accessible and simple to operate and shall be grouped together in as few locations as possible at positions not likely to be cut off by a fire in the protected space.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu24

The Shipping (Portable Fire Extinguishers) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. **Title and commencement**—(1) This notice may be cited as the Shipping (Portable Fire Extinguishers) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. **Performance Standard prescribed**—The Performance Standard set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Performance Standard for Portable Fire Extinguishers

1. Except where specified in the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 the capacity of portable fire extinguishers shall be as follows:

(1) Portable fire extinguishers (other than carbon dioxide, or dry powder fire extinguishers) shall, if they are a type discharging fluid, have a capacity of not more than 13.5 litres and not less than 9 litres.

(2) Portable carbon dioxide fire extinguishers shall have a capacity of not less than 3 kilogrammes of carbon dioxide.

(3) Portable dry powder fire extinguishers shall have a capacity of not less than 4.5 kilogrammes of dry powder.

(4) Portable fire extinguishers of other types shall be of not less than the fire extinguishing equivalent of a 9 litre fluid fire extinguisher and as portable as a 13.5 litre fluid extinguisher.

2. Portable fire extinguishers for use in accommodation or service spaces of any ship shall so far as practicable have a uniform method of operation.

3. Fire extinguishers provided for use in any ship shall not be of a type which contains an extinguishing medium which either itself or when in use gives off toxic gases in such quantities as to be harmful to persons.

4. The capacity of any fire extinguisher other than a carbon dioxide fire extinguisher shall be taken to be the greatest volume or mass of extinguishing medium which it can contain when sufficient space is left to ensure the proper operation of the extinguisher.

5. The capacity of a carbon dioxide fire extinguisher shall be taken to be the greatest mass of carbon dioxide which it can safely contain in a tropical climate.

6. Specifications relating to scope, contents, operation, construction, and marking of fire extinguishers manufactured in New Zealand shall be to New Zealand Standard Specifications as follows:

(1) Portable water, foam, and dry powder fire extinguishers to NZSS 4506:1978.

(2) Portable carbon dioxide fire extinguishers to NZSS 4508: 1979.

7. Specifications relating to scope, contents, operation,

construction, and marking of fire extinguishers manufactured outside New Zealand shall be to British Standard 5423: 1987.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

lu25

The Fire Appliances (Code of Practice for Ships of Classes I and II) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. **Title and commencement**—(1) This notice may be cited as the Fire Appliances (Code of Practice for Classes I and II Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. **Code of Practice prescribed**—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Classes I and II

1. **Interpretation**—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Classes I and II” are as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Regulations for Fire Appliances) Notice 1989.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m:

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and

air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Class I on the 1st day of July 1986: and

(b) in the case of a ship of Class II on the date of commencement of this notice;

and for the purpose of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special-category space” means any enclosed space above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access:

“Surface effect ship” means a ship the weight of which the normal operating condition is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

2. Application—This Code of Practice applies to Ships of Classes I and II except ships of Class II which are hydrofoil ships or surface effect ships.

3. Automatic sprinkler, fire detection and fire alarm systems—(1) In every ship of Class I, and every ship of Class II of 24m in length and over, manually operated call points shall be fitted throughout the passenger and crew spaces

which will enable the fire patrol required by Regulation 5 of the Shipping (Fire Appliances) Regulations 1989 to give an alarm immediately to the navigating bridge or fire control station.

(2) In every ship of Class I, and every ship of Class II of 24m in length and over, there shall be provided in any part of the ship, which in the opinion of the Chief Surveyor is not accessible to the fire patrol referred to in sub-clause (1) of this clause, a fixed fire detection and alarm system complying with the requirements of the Performance Standard for Fixed Fire Detection and Fire Alarms.

Provided the Chief Surveyor may exempt any ship from the requirement of this subclause if he is satisfied that to require compliance therewith would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

(3) In every ship of Class I, and every ship of Class II of 24m in length and over, in any machinery space where propulsion and associated machinery including sources of main electrical supply are provided with automatic or remote control which are under continuous manned supervision from a control room, there shall be provided a fixed fire detection and fire alarm system complying with the requirements of the Performance Standard for Fixed Fire Detection and Fire Alarm Systems.

(4) In every ship of Class I and every ship of Class II of 24m in length and over, depending on the method of fire protection as required by The Shipping (Construction) Regulations 1989, used in the construction of the ship; there shall be installed throughout each separate zone whether vertical or horizontal in all accommodation and service spaces and where it is considered necessary by the Chief Surveyor in control rooms, either:

(a) a fixed fire detection and fire alarm system of an approved type and complying with the requirements of the Performance Standard for Fixed Fire Detection and Fire Alarm Systems so installed and arranged as to detect the presence of fire in such spaces; or

(b) an automatic sprinkler, fire detection and fire alarm system (of an approved type and complying with the requirements of the Performance Standard for Automatic Sprinkler, Fire Alarm and Fire Detection Systems) so installed and arranged as to protect such spaces and in addition a fixed fire detection and fire alarm system of an approved type (complying with the requirements of the Performance Standard for Fixed Fire Detection and Fire Alarm Systems) so installed and arranged as to provide smoke detection in corridors, stairways and escape routes within accommodation spaces.

Except that neither system need be installed in void spaces, sanitary spaces and spaces which afford no substantial fire risk.

(5) Every ship of Class I and Class II shall at all times when at sea, or in port (except when out of service), be so manned and equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew.

(6) In every ship of Class I and every ship of Class II of 24m in length and over a special alarm, operated from the navigating bridge or fire control station, shall be fitted to summon the crew. This alarm may be part of the ship's general alarm system but it shall be capable of being sounded independently of the alarm to the passenger spaces.

(7) In every ship of Class I and Class II a public address system or other effective means of communication shall be available throughout the accommodation and service spaces and control stations.

(8) In every new Ship of Class II of less than 45m, but not less than 24m which is constructed of combustible materials or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in

the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

4. Fire pumps—(1) Every ship of Class I with a gross tonnage of 4000 or over shall be provided with at least three power-operated fire pumps, and every ship of Class I with a gross tonnage of less than 4,000 shall be provided with at least two power-operated fire pumps. Each such pump shall be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants, hoses, and nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(2) Every ship of Class II of 90m in length or over shall be provided with at least three power-operated fire pumps, each of which shall be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants hoses and nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(3) Every ship of Class II of less than 90m but not less than 45m in length shall be provided with at least two power-operated fire pumps, each of which shall be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants, hoses, and nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(4) Every ship of Class II of less than 45m but not less than 24m in length shall be provided with at least one power-operated fire pump, which shall be capable of delivering at least one jet of water simultaneously from each of any two fire hydrants, hoses, and nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(5) Every ship of Class II of less than 24m in length shall be provided with at least one power-operated fire pump, which may be driven by the main engine, capable of delivering at least one jet of water from any fire hydrant, hose and nozzle provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(6) In every ship of Class I with a gross tonnage of 1000 or over, and in every ship of Class II of 45m in length or over, the sea connections, pumps, and the sources of power for operating them shall be so arranged as to ensure that a fire in any one compartment will not put all the fire pumps out of action.

(7) If, in any ship of Class I with a gross tonnage of less than 1,000, or in any ship of Class II of less than 45m in length, a fire in any one compartment could put all the fire pumps out of action, there shall be provided in a position outside the machinery spaces an emergency fire pump complying with clause 16 (8) of the General Code.

Provided that in the case of a ship of Class II of less than 24m in length, the emergency fire pump may be hand-operated complying with clause 16(9) of the General Code.

5. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship of Class I, or II shall be provided with a fire main, water-service pipes, and hydrants complying with the provision of clause 17 of the General Code and with hoses and nozzles complying with the provisions of clause 18 of the General Code.

(2) In every ship of Class I, and in every ship of Class II of 24m in length or over, the arrangement of fire main and water-service pipes and the number and position of fire hydrants, hoses, and nozzles, shall be such that—

(a) At least 2 jets of water may reach any part of the ship

normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces the requirements of paragraph (a) of this subclause to be complied with when all watertight doors and all doors in main vertical-zone bulkheads are closed; and

(c) In every ship with a gross tonnage of 1000 or over, at least 1 jet of water is to be immediately available from any 1 hydrant, hose, and nozzle in an interior location and that arrangements shall be made to ensure the continuation of the output of water by the automatic starting of a fire pump; and

(d) Every machinery space of Category "A" shall be provided with 2 fire hydrants, 1 on the port side and 1 on the starboard side; and

(e) In every ship in which there is access to machinery spaces of Category "A" from a shaft tunnel, 2 fire hydrants shall be provided in the tunnel at the end adjacent to the machinery spaces; and

(f) In every ship in which there is access to machinery spaces of Category "A" at a low level from an adjacent space or spaces, other than a shaft tunnel, there shall be provided in 1 of these spaces 2 hydrants; but such provision shall not be required when the adjacent spaces are not part of an escape route.

(3) In every ship of Class II of less than 24m in length, the arrangement of fire-main and water-service pipes and the number and position of fire hydrants, hoses, and nozzles, shall be such that:

(a) At least 1 jet of water may reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause to be complied with when all watertight doors are closed; and

(c) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with 1 fire hydrant.

(4) Every ship of Class I, or II shall be provided with at least 1 hose and 1 dual-purpose nozzle for every hydrant fitted in the ship, but in any event not less than 2 hoses and 2 nozzles in total.

(5) Every ship of Class I and every ship of Class II of 24m in length or over carrying more than 36 passengers, shall be provided with water-fog applicators according to the following scale:

(a) Two in every machinery space of Category A and

(b) One for each pair of fire crew outfits ;

Provided that in ships of Class II of less than 45m in length and not under 24m in length, only 1 water-fog applicator need be provided in compliance with paragraph (a) of this subclause.

6. Portable fire extinguishers in accommodation and service space—In every ship of Class I, or II there shall be provided:

(a) On each deck a sufficient number of portable fire extinguishers, so that at least 2 of these shall be readily available for use in every accommodation and service space between watertight bulkheads and main vertical-zone bulkheads; and

(b) In enclosed accommodation and service spaces above the bulkhead deck at least 1 portable extinguisher for use on each side of the ship in such spaces; and

(c) At least 1 portable fire extinguisher and a fire blanket in every galley, and where the superficial deck area of any galley

exceeds 45m² at least 2 portable extinguishers and 2 fire blankets.

Provided that a fire blanket shall not be required in a ship of Class II of less than 24m in length; and

(d) At least 1 portable fire extinguisher in each control station.

7. Fixed fire-smothering arrangements in cargo spaces—

(1) In every ship of Class I with a gross tonnage of 1000 or over and in every ship of Class II of 45m in length or over, there shall be provided a fixed fire-smothering gas installation complying with the requirements of clause 24 of the General Code or a fixed high-expansion foam fire-extinguishing system complying with the requirements of clause 25 of the General Code which shall be so arranged as to protect every cargo space.

(2) The Chief Surveyor may exempt any ship of Class II from the requirements of this clause, if he is satisfied that to require compliance therewith would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

8. Machinery spaces of Category A containing oil fired boilers or oil burning equipment—

(1) In every ship of Class I, and in every ship of Class II of 24m in length or over, there shall be provided for the protection of any machinery space of Category A containing any oil-fired boiler or oil fuel units:

(a) Any 1 of the following fixed fire extinguishing systems:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code:

(ii) A fire smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code:

(iii) A high expansion foam system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code:

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

(b) In each boiler room at least 1 set of portable air-foam equipment complying with the requirements of the Performance Standard referred to in clause 27 of the General Code.

(c) In each firing space in each boiler room and in each space which contains any part of any oil fuel installation, at least 2 portable fire extinguishers.

(d) In each boiler room 1 or more foam fire extinguisher each of at least 135 litres capacity, or carbon dioxide fire extinguisher each of at least 45 kg capacity placed in such positions so as to be readily accessible in the event of fire and shall be sufficient in number to enable the foam or carbon dioxide to be directed on to any part of the boiler room and spaces containing any part of the oil-fuel installation.

(e) In each firing space a receptacle containing at least 250 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) In every ship of Class II of less than 24m in length, there shall be provided for the protection of any space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit:

(a) 1 or more foam fire-extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16 kg capacity. The extinguisher or extinguishers shall be sited so as to be readily accessible in the event of fire, and they shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of such spaces;

(b) In each firing space and in each space which contains

any part of any oil-fuel installation, at least 2 portable fire extinguishers;

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(3) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclauses (1) and (2) of this clause shall be provided in addition to any fire appliances required by clause 8 of this code.

Provided that, if the largest single area over which oil fuel may spread in the event of a leakage is less than 9m², one foam fire-extinguisher of at least 135 litres capacity or a carbon-dioxide fire extinguisher of at least 45 kg capacity may be provided instead of the appliances required by subclauses (1)(a) and (1)(d) of this clause.

9. Machinery spaces of Category A containing internal combustion type machinery—

(1) In every ship of Class I or Class II, there shall be provided for the protection of every machinery space of Category A containing internal combustion type machinery:

(a) 1 of the following fixed fire extinguishing systems:

(i) A pressure water spraying system, complying with the requirements of the Performance Standard referred to in clause 22 of the General Code or

(ii) A fire smothering gas system, complying with the requirements of the Performance Standard referred to in clause 24 of the General Code or

(iii) A high expansion foam system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code.

(b) Foam fire extinguishers of not less than 45 litres capacity or carbon-dioxide fire extinguishers of not less than 16 kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards.

(c) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10 m walking distance from any point in the space: provided that there shall be not less than two such extinguishers:

(d) At least 1 set of portable air-foam equipment complying with the requirements of the Performance Standard referred to in clause 27 of the General Code.

10. Machinery spaces containing steam engines—In every ship of Class I, or Class II, there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) Foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers each, of at least 16 kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure-lubrication system and on to any part of the casing enclosing pressure-lubricated parts of turbines, engines, or associated gearing.

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with clause 8(1)(a) or clause 9 (1)(a) of this code.

Provided also that such extinguishers shall not be required in any space containing only auxiliary machinery having an aggregate power of less than 375 kW.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion-machinery

and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

11. Fire extinguishing appliances in other machinery spaces—In every ship of Class I or Class II where a fire hazard exists in any machinery space for which no specific provisions for fire extinguishing are required by clauses 8, 9 or 10 of this code there shall be provided in, or adjacent to, that space a sufficient number of portable fire extinguishers to ensure that at least 1 extinguisher is not more than 10m walking distance from any position within that space unless equivalent means of fire extinction are provided.

12. Fire crew outfits—(1) Every ship of Class I, and every ship of Class II of 24m in length or over, shall carry 2 fire crew outfits and in addition 2 fire crew outfits and 2 sets of personal equipment comprising items 1(a)(b) and (c) of clause 5 of the Performance Standard, The Shipping (Miscellaneous Fire Appliances) Notice 1989, for every 80m, or part thereof, of the aggregate of the lengths of all passenger spaces and service spaces on the deck which carries such spaces or, if there is more than one such deck, on the deck which has the largest aggregate of such lengths.

(2) Every ship of Class II of less than 24m in length shall carry at least 1 fire crew outfit.

(3) Every fire crew outfit shall comply with the requirements of clause 20 of the General Code and with the Performance Standard referred to therein.

(4) In every ship of Class I and every ship of Class II of 24m in length or over carrying more than 36 passengers there shall be provided for each pair of breathing apparatus, a water-fog applicator which shall be stored adjacent to such apparatus.

(5) In every ship of Class I or Class II provided with breathing apparatus of the air hose type where an air hose of more than 36m in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least 1 breathing apparatus of the self contained type shall be provided.

13. International shore connection—Every ship of Class I or Class II, with a gross tonnage of 500 or over shall be provided with at least 1 international shore connection, which shall comply with the requirements of the Performance Standard referred to in clause 19 of the General Code to enable water to be supplied from another ship or from the shore to the fire main, and fixed provision shall be made to enable such a connection to be used on the port side and on the starboard side of the ship.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships of Class III) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Class III Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class III

1. Interpretation—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Class III” is as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m.

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached, in the case of a ship of Class III on the date of commencement of this notice;

and for the purpose of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 percent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special category space” means any enclosed space above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access:

“Surface effect ship” means a ship the weight of which in the normal operating conditions is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

2. Application—This Code of Practice applies to Ships of Class III except, such ships which are hydrofoil ships or surface effect ships.

3. Automatic sprinkler, fire detection and fire alarm systems—(1) Every ship of Class III, 24m in length and over, shall depending on the degree of fire protection used in the construction of the ship as required in the Shipping (Construction) Regulations 1989 for Ships of Class III be provided with either.

(a) an automatic sprinkler, fire detection and alarm system, or

(b) a fixed fire detection and alarm system

Except that neither system need be installed in void spaces, sanitary spaces and spaces which afford no substantial fire risk.

(2) In addition to the requirements of subclause (1) of this clause there shall be provided, in every ship of Class III of 45m in length or over, manually operated call points throughout the passenger and crew spaces which will enable the fire patrol, required by Regulation 5 of the Shipping (Fire Appliances) Regulations 1989, to give a alarm immediately to the navigating bridge or main fire control station.

(3) Every ship of Class III shall at all times when at sea or in port be so manned and equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew:

Provided that this requirement shall not apply when any such ship is out of service.

(4) Every ship of Class III of 45m in length or over shall be provided with an alarm operated from the bridge or control station to summon the crew. This alarm may be part of the

ship's general alarm system, but shall be capable of being sounded independently of the alarm to the passenger spaces.

(5) Every ship of Class III of 45m in length or over shall be provided with a public-address system or other effective means of communication throughout the accommodation and service spaces and control stations.

(6) The Chief Surveyor may exempt any ship from any of the requirements of this clause if he is satisfied that to require compliance therewith would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

(7) In every new Ship of Class III of less than 45m, but not less than 24m which is constructed of a combustible material or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

4. Fire Pumps—(1) Every ship of Class III of 90m in length or over shall be provided with at least 2 power-operated fire pumps, and every ship of Class III of less than 90m but not less than 45m in length shall be provided with at least 1 power-operated fire pump. Each such pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 fire hydrants, hoses, or nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(2) Every ship of Class III of less than 45m in length shall be provided with at least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water as required by this code from any fire hydrant hose, or nozzle provided in the ship and shall comply with the requirements of clause 16(1) of the General Code. In any such ship of less than 24m in length, the fire pump may be operated by the main engine.

(3) If in any ship of Class III a fire in any one compartment could put all the fire pumps out of action, there shall be provided in a position outside the machinery spaces an emergency fire pump complying with the requirements of clause 16(8) of the General Code.

Provided that in the case of a ship of Class III of less than 45m in length the emergency fire pump may be hand-operated complying with the requirements of clause 16(9) of the General Code.

5. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship of Class III shall be provided with a fire main, water-service pipes, and hydrants complying with the provision of clause 17 of the General Code and with fire hoses and nozzles complying with the provisions of clause 18 of the General Code.

(2) In every ship of Class III of 45m in length or over, the arrangement of fire-main and water-service pipes and the number and position of fire hydrants, hoses, and nozzles shall be such that:

(a) At least 2 jets of water may reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause can be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed; and

(c) In every such ship with a gross tonnage of 1000 or over, at least 1 jet of water is immediately available from any 1 hydrant, hose, or nozzle in an interior location, and that

arrangements shall be made to ensure the continuation of the output of water by the automatic starting of a fire pump; and

(d) Every machinery space of category A shall be provided with at least 1 fire hydrant.

(3) In every ship of Class III of less than 45m in length, the arrangement of fire-main and water-service pipes and the number and position of fire hydrants, hoses, and nozzles shall be such that:

(a) At least 1 jet of water having a throw of 6m may reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause can be complied with when all watertight doors are closed; and

(c) Every machinery space of category A shall be provided with 1 fire hydrant.

(4) Every ship of Class III shall be provided with at least 1 hose and 1 dual-purpose nozzle for every hydrant fitted in the ship, but in any event not less than 2 hoses and 2 nozzles.

(5) Every ship of Class III of 45m in length or over shall be provided with water-fog applicators according to the following scale:

- (a) One in every machinery space of Category A; and
- (b) One for each pair of fire crew outfits.

6. Portable fire extinguishers in accommodation and service spaces—Every ship of Class III shall be provided with at least 1 portable fire extinguisher in each of the passenger spaces above the bulkhead deck, and with at least 2 such extinguishers in each of the crew spaces and of the passenger spaces below that deck. At least 1 portable fire extinguisher and 1 fire blanket shall be available for use in any galley. At least 1 portable fire extinguisher shall be provided in each control station.

7. Machinery spaces of Category A containing oil fired boilers or oil burning equipment—(1) In every ship of Class III of 24m in length or over there shall be provided for the protection of any machinery space of Category A containing any oil fired boilers or oil fuel units:

- (a) One of the following fixed fire extinguishing systems:
 - (i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code.
 - (ii) A fire-smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code.
 - (iii) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code; and, if the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this paragraph be regarded as a single space.

(b) In each boiler room one or more foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16kg capacity. The extinguishers shall be sited so as to be readily accessible in the event of fire, and they shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil-fuel installation;

(c) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers;

(d) In each firing space, a receptacle containing at least 250 litres of sand or other dry material suitable for quenching oil

fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) In every ship of Class III of less than 24m in length, there shall be provided for the protection of any space containing any oil-fired boiler, oil fuel settling tank, or oil-fuel unit:

(a) At least 1 foam fire extinguisher of at least 45 litres capacity or one carbon-dioxide extinguisher of at least 16 kg capacity. The extinguisher shall be sited so as to be readily accessible in the event of fire;

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers;

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(3) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclauses (1) and (2) of this clause shall be provided in addition to any fire appliances required clauses 8 and 9 of this code.

Provided that if the largest single area over which oil fuel may spread in the event of a leakage is less than 9m², 1 foam fire extinguisher of at least 135 litres capacity or a carbon-dioxide fire extinguisher of at least 45 kg capacity may be provided instead of the provisions of subclauses (1)(a) and (1)(b) of this clause.

8. Machinery spaces of Category A containing internal combustion type machinery—(1) In every ship of Class III there shall be provided for the protection of every machinery space of Category A containing internal-combustion type machinery

(a) Any one of the following fixed fire-extinguishing systems:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code; or

(ii) A fire smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code; or

(iii) A high expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code;

Provided that a fixed installation shall not be required in any ship of less than 24m in length.

(b) 1 foam fire extinguisher of not less than 45 litres capacity or a carbon-dioxide fire extinguisher of not less than 16 kg capacity;

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW;

(c) Sufficient portable fire extinguishers so located that 1 portable extinguisher is not more than 10m walking distance from any point in the space;

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(2) In any ship of Class III of less than 24m in length, there may be provided, instead of the extinguishers required by subclause (1) (b) and (c) of this clause, not less than 5 portable extinguishers.

9. Machinery spaces containing steam engines—In every ship of Class III there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main propulsion or auxiliary purposes:

(a) Foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16 kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casing enclosing pressure-lubricated parts or turbines, engines, or associated gearing.

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with Clause 7 (1)(a) or clause 8 (1)(a) of this code.

Provided also that such extinguishers shall not be required in any space containing only auxiliary machinery of less than 375 kW.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space;

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

10. Fire extinguishing appliances in other machinery spaces—In every ship of Class III where a fire hazard exists in any machinery space for which no specific provisions for fire extinguishing are required by Clauses 7, 8, or 9 of this code there shall be provided in or adjacent to that space a sufficient number of portable fire extinguishers to ensure that at least 1 extinguisher is not more than 10m walking distance from any position within that space unless equivalent means of fire extinction are provided.

11. Fire crew outfits—(1) Every ship of Class III of 24m in length or over shall carry 2 fire crew outfits for each 60m (or part thereof) of the length of the ship. Every such outfit shall comply with the requirements of clause 30 of the General Code and with the Performance Standard referred to therein.

(2) In any ship of Class III provided with breathing apparatus of the air hose type where an air hose of more than 36m in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces at least 1 breathing apparatus of the self contained type shall be provided.

(3) Every ship of Class III of less than 24m in length shall carry 1 fire crew axe and 1 safety lamp complying with the requirements of items 1(d) and (e) of the Performance Standard referred to in clause 30 of the General Code.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships of Classes IV, V and Ships of Class VI Less Than 45m) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Classes IV, V and VI Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Classes IV, V and VI

1. Interpretation—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Clauses IV, V and VI” are as stated in the Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m:

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction if reached in the case of a ship of Class IV, V and VI on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium, if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special-category space” means any enclosed spaces above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a spaces into and from which such vehicles can be driven and to which passengers have access:

“Surface effect ship” means a ship the weight of which in the normal operating conditions is partially supported by a cushion of air expelled from the ships and by the buoyancy of its immersed hull or hulls.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

2. Application—This Code of Practice applies to Ships of Classes IV, V and Ships of Class VI less than 45M in length, except such ships which are hydrofoil ships or surface effect ships.

3. Ships of Class VI of 45m in length and over—Every ship of Class VI of 45m in length and over shall comply with the provisions of The Fire Appliances (Codes of Practice for Ships of Class VI of 45 m in Length and Over) Notice 1989.

4. Fire alarms—In every new Ship of Classes IV, V, VI of less than 45m, but less than 24m which is constructed of a combustible material or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

5. Fire pumps—(1) Every ship of Class IV and V of 24m in length or over and every ship of Class VI of 24m in length or over but less than 45m in length shall be provided with at least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water from any fire hydrant hose of nozzle provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(2) Every ship of Class IV, V, or VI of less than 24m in length but not less than 15m in length, shall be provided with at least 1 power-operated pump, which may be operated by the main engine and shall be capable of delivering a jet of water having a

throw of at least 6m from any fire hydrant, hose, or nozzle provided in the ship.

(3) Every ship of Class IV, V, or VI of less than 15m in length shall be provided with either:

(a) At least 1 power-operated or manually-operated fire pump having a permanent sea connection. That pump shall be capable of delivering a jet of water having a throw of at least 6m through any fire hydrant, hose or nozzle provided in the ship; or

(b) at least 2 fire buckets provided that in any ship of Class V of less than 6m the minimum number of fire buckets may be 1.

(4) Every ship of Class IV and V of 24m in length or over and every ship of Class VI of 24m in length or over but not over 45m in length shall be provided with a manual or power-operated emergency fire pump, which shall be permanently connected to the fire-main and water service pipes. If the emergency fire pump is power operated, it shall comply with the requirements of clause 16(8) of the General Code, and, if it is manually operated, it shall comply with the requirements of clause 16(9) of the General Code.

(5) Where, in any ship of Class IV, V, or VI of less than 24m in length, the fire pump provided in compliance with the requirements of subclause (2) or subclause (3) of this clause is situated in the machinery space, there shall be provided, in addition, the fire buckets as required by subclause (3)(b) of this clause.

6. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship of Class IV and V and every ship of Class VI of less than 45m in length shall be provided with fire main, water service pipe, and hydrants complying with clause 17 of the General Code and with hoses and nozzles complying with the provision of clause 18 of the General Code, whereby at least one jet of water having a throw of not less than 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty.

Provided that this requirement shall not apply to any ship of Class IV, V or VI of less than 15m in length in which fire buckets are carried instead of a fire pump in accordance with the provisions of clause 5(3)(a) of this code.

(2) The arrangement of fire main, water-service pipes, hydrants, hoses, and nozzles shall be such that:

(a) The requirements of this clause can be complied with when all watertight doors are closed; and

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with at least 1 fire hydrant;

Provided that in any ship of Class IV, V, or VI of less than 24m in length a hydrant need not be provided in any such space if, in the opinion of a Surveyor, water can be effectively directed into that space from a hydrant located outside that space.

(3) Every ship of Class IV, and V, and every ship of Class VI of less than 45m in length, shall be provided with:

(a) 1 hose for every hydrant fitted in the ship, and

(b) 1 dual-purpose nozzle for every hose provided.

7. Portable fire extinguishers—(1) Every ship of Class IV and Class V of 24m in length or over, and every ship of Class VI of 24m in length and over but not more than 45m in length, shall be provided with:

(a) Sufficient portable fire extinguishers to ensure that at least 1 such extinguisher will be readily available for use in any part of the accommodation or service spaces, with a minimum of 3 such extinguishers; and

(b) At least 1 portable fire extinguisher and 1 fire blanket in any galley; and

(c) Portable fire extinguishers in boiler and machinery

spaces in accordance with the provisions of clauses 8, 9 and 10 of this Code.

(2) Every ship of Class IV, V, or VI of less than 24m in length shall be provided with portable fire extinguishers in accordance with the following table:

<i>Length of Ship</i>	<i>Number of Extinguishers</i>
Under 9m	2
9m or more and under 15m	3
15m or more and under 24m	4

(3) Every ship of under 9m in length at least 1 and, in every ship of 9m and over but under 24m in length, at least 2 of the fire extinguishers required under subclause (2) of this clause shall be of a type suitable for extinguishing oil fires, and shall be located in or adjacent to the machinery spaces and shall have a minimum capacity in accordance with the following scale.

Foam	9 Litres
Carbon dioxide	4.5 kg
Dry powder	4.5 kg

The minimum capacities of the other fire extinguishers required under subclause (2) of this clause shall be in accordance with the following scale:

Water or Foam	9 Litres
Carbon dioxide	2 kg
Dry powder	1 kg

(4) The fire extinguishers required by subclause (2) of this clause shall be distributed so as to be readily available in the event of a fire in any of the passenger, crew or machinery spaces, and shall be located to the satisfaction of a Surveyor.

(5) The fire extinguishers required to be provided by subclause (2) of this clause shall be additional to any extinguishers which may be required in compliance with clause 8(2) or clause 10 of this Code.

8. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship of Class IV and Class V of 24m in length or over and every ship of Class VI of 24m in length or over but not more than 45m in length, every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit shall be provided with:

(a) One of the following fixed fire-extinguishing installations:

- (i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code;
- (ii) A fire-smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code;
- (iii) A high-expansion foam fire-extinguishing system complying with the Performance Standard referred to in clause 25 of the General Code.

(b) 1 or more foam fire extinguishers, each of at least 135 litres capacity, or carbon-dioxide extinguishers, each of at least 45 kg capacity. The extinguishers shall be provided with hoses on reels, shall be sited so as to be readily accessible in the event of fire, and shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil fuel installation. If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space; and

(c) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers; and

(d) In each firing space, a receptacle containing at least 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) In every ship of Class IV, V, and every Ship of Class VI of less than 24m in length, every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit, shall be provided with:

(a) 1 or more foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide extinguishers, each of at least 16kg capacity, sited so as to be readily accessible in the event of fire, and sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil-fuel installation; and

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 1 portable fire extinguisher; and

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(3) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclauses (1) and (2) of this clause shall be provided in addition to any fire appliances required by clause 8 of this Code.

Provided that if the largest single area over which oil fuel may be spread in the event of a leakage is less than 9m² the provisions of subclause (1)(a) or, as the case may require, subclause (2)(a) of this clause shall be complied with by the provision of 1 fire extinguisher of at least 135 litres capacity or 1 carbon-dioxide fire extinguisher of at least 45kg capacity.

9. Machinery spaces containing internal-combustion type machinery—(1) In every ship of Class IV, or V of 24m in length or over, every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes shall be provided with:

(a) 1 foam fire extinguisher of at least 45 litres capacity or 1 carbon-dioxide fire extinguisher of at least 16 kg capacity.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW; and

(b) Sufficient portable fire extinguishers, so located that a portable extinguisher is not more than 10m walking distance from any point in that space;

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing, only auxiliary machinery.

(2) In every ship of Class VI of 24m in length or over but not more than 45m in length, there shall be provided for the protection of every space containing internal-combustion type machinery used for main propulsion or auxiliary purposes:

(a) 1 of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code;

(ii) A fire-smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code;

(iii) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code.

Provided that a fixed installation shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW; and

(b) Sufficient portable fire extinguishers, so located that a portable extinguisher is not more than 10m walking distance from any point in that space.

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(3) In every ship of Class IV, V, or VI of less than 24m in length, the spaces containing internal-combustion type propulsion or auxiliary machinery shall be protected by the portable extinguishers required by clause 7(2) of this Code.

(4) Every ship of Class IV, V, or VI fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(5) The fixed installation required under subclause (4) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide—mass required:

<i>Net Volume of Spaces to be Protected: cubic metres</i>	<i>Mass of Carbon Dioxide in kilograms</i>
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125m ³ and over	1.0 kg CO ₂ per 1.25m ³ space

(b) If discharging a fire-smothering gas other than carbon dioxide the installation shall have a capacity approved by the Chief Surveyor.

(6) The fixed installation required under subclause (4) of this clause may be manually or automatically operated, but any automatically operated installation shall be provided with an alarm giving audible warning to persons within the protected spaces.

(7) Where in the opinion of the Chief Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of subclause (4) of this clause to be dispensed with.

(8) Where a ship of Class IV, V, or VI of less than 24m in length fitted with propelling machinery which uses fuel having a flash point of less than 60°C is fitted with a fixed fire-smothering gas installation, the number of fire extinguishers required under the provisions of clause 7(2) of this Code may be reduced to 2 portable extinguishers, of which 1 shall be of a type suitable for extinguishing oil fires.

(9) Every ship of Class IV, V, or VI fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel-storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel gas vapour.

10. Machinery spaces containing steam engines—(1) In every ship of Class IV, or V, and every ship of Class VI of less than 45m in length, there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon-dioxide fire extinguisher of not less than 16 kg capacity:

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW and

(b) At least 2 portable fire extinguishers in any space

containing main-propulsion machinery and at least one portable extinguisher in any space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire extinguishers provided in compliance with clause 8 of this Code.

11. Fire crew outfits—(1) Every ship of Class IV of 24m in length or over, and every ship of Class VI of 24m in length but not over 45m in length, shall carry at least 1 fire crew outfit, which shall comply with the requirements of clause 30 of the General Code and the Performance Standard referred to therein.

(2) Every ship of Class IV or Class VI of less than 24m in length shall be provided with at least 1 suitable axe.

(3) Every ship of Class V of 45m in length or over shall carry at least 1 fire outfit, which shall comply with the requirements of clause 30 of the General Code and the Performance Standard referred to therein.

(4) Every ship of Class V of less than 45m in length but not less than 9m in length, shall be provided with at least 1 suitable axe.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships of Class VI of 45m in Length and Over) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Class VI Ships of 45m in Length and Over) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class IV of 45m in Length and Over

1. Interpretation—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Class VI” is as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Hydrofoil ships” means a ship which is supported above the water surface in normal conditions by hydrodynamic force generated on foils.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m.

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

- (a) internal combustion machinery used for main propulsion; or
- (b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or
- (c) any oil-fired boiler or oil fuel unit.

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached in the case of a ship of Class VI on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which such a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium, if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special-category space” means any enclosed space above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access:

“Surface effect ship” means a ship the weight of which in the normal operating condition is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

2. Application—This Code of Practice applies to Ships of Class VI of 45m in length and over except such ships which are hydrofoil ships or surface effect ships.

3. Automatic sprinkler, fire detection and fire alarm systems—(1) Every ship of Class VI of 45m in length and over, depending on the degree of fire protection required by the Shipping (Construction) Regulations 1989 used in the construction of the ship there shall be provided in the accommodation and service spaces with either:

- (a) an automatic sprinkler, fire detection, and fire alarm systems, or
- (b) a fixed fire detection and alarm system.

Except that neither system need be installed in void spaces, sanitary spaces and spaces which afford no substantial fire risk.

(2) In addition to the requirements of subclause (1) of this clause there shall be provided, in every ship of Class VI of 45m in length or over, manually operated call points throughout the passenger and crew spaces which will enable the fire patrol, required by Regulation 5 of the Shipping (Fire Appliances) Regulations 1989, to give an alarm immediately to the navigating bridge or main fire control station.

(3) Every ship of Class VI of 45m length and over shall at all times when at sea or in port be so manned and equipped as to ensure that any initial fire alarm is immediately received by a responsible member of the crew:

Provided that this requirement shall not apply when any such ship is out of service.

(4) Every ship of Class VI of 45m in length or over shall be provided with an alarm operated from the bridge or control station to summon the crew. This alarm may be part of the ship's general alarm system, but shall be capable of being sounded independently of the alarm to the passenger spaces.

(5) Every ship of Class VI of 45m in length or over shall be provided with a public-address or other effective means of communication throughout the accommodation and service spaces and control stations.

(6) The Chief Surveyor may exempt any ship from any of the requirements of this clause if he is satisfied that to require compliance therewith would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

4. Fire pumps—(1) Every ship of Class VI of 90m in length or over shall be provided with at least 2 power-operated fire pumps, and every ship of Class VI of less than 90m but not less than 45m in length shall be provided with at least 1 power-operated fire pump. Each such pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 fire hydrants, hoses, or nozzles provided in the ship and shall comply with the requirements of clause 16(1) of the General Code.

(2) If in any ship of Class VI of 45 in length and over a fire in any one compartment could put all the fire pumps out of action, there shall be provided in a position outside the machinery spaces an emergency fire pump complying with the requirements of clause 16(8) of the General Code.

5. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship of Class VI of 45m in length and over

shall be provided with a fire main, water-service pipes, and hydrants complying with the provision of clause 17 of the General Code and with fire hoses and nozzles complying with the provisions of clause 18 of the General Code.

(2) In every ship of Class VI of 45m in length or over, the arrangement of fire-main and water-service pipes and the number and position of fire hydrants, hoses, and nozzles shall be such that:

(a) At least 2 jets of water may reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause can be complied with when all watertight doors and all doors in main vertical zone bulkheads are closed; and

(c) In every such ship with a gross tonnage of 1000 or over, at least 1 jet of water is immediately available from any 1 hydrant, hose, or nozzle in an interior location, and that arrangements shall be made to ensure the continuation of the output of water by the automatic starting of a fire pump; and

(d) Every machinery space of category A shall be provided with at least 1 fire hydrant.

(3) Every ship of Class VI of 45m in length and over shall be provided with at least 1 hose and 1 dual-purpose nozzle for every hydrant fitted in the ship, but in any event not less than 2 hoses and nozzles.

(4) Every ship of Class VI of 45m in length or over shall be provided with water-fog applicators as follows:

(a) One in every machinery space of Category A and

(b) One for each pair of fire crew outfits.

6. Portable fire extinguishers in accommodation and service spaces—Every ship of Class VI of 45m in length and over shall be provided with at least 1 portable fire extinguisher in each of the passenger spaces above the bulkhead deck, and with at least 2 such extinguishers in each of the crew spaces and of the passenger spaces below that deck. At least 1 portable fire extinguisher and 1 fire blanket shall be available for use in any galley. At least 1 portable fire extinguisher shall be provided in each control station.

7. Machinery spaces of Category A containing oil fired boilers or oil burning equipment—(1) In every ship of Class VI of 45m in length or over there shall be provided for the protection of any machinery space of Category A containing any oil fired boilers or oil fuel units:

(a) One of the following fixed fire extinguishing systems:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code.

(ii) A fire-smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code.

(iii) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code.

If the engine and boiler rooms are not entirely separate, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this paragraph be regarded as a single space.

(b) In each boiler room one or more foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16 kg capacity. The extinguishers shall be sited so as to be readily accessible in the event of fire, and they shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil-fuel installation.

(c) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers.

(d) In each firing space, a receptacle containing at least 250 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

8. Machinery spaces of Category A containing internal combustion type machinery—(1) In every ship of Class VI of 45m in length and over there shall be provided for the protection of every machinery space of Category A containing internal-combustion type machinery.

(a) Any one of the following fixed fire extinguishing systems:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code;

(ii) A fire smothering gas system complying with the requirements of the Performance Standard referred to in clause 24 of the General Code.

(iii) A high expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code.

(b) 1 foam fire extinguisher of not less than 45 litres capacity or a carbon-dioxide fire extinguisher of not less than 16 kg capacity.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW,

(c) Sufficient portable fire extinguishers so located that 1 portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(2) Every ship of Class VI of 45m in length and over fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(3) The fixed installation required under subclause (2) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide—mass required:

Net Volume of Spaces to be Protected: to be Protected:	Mass of Carbon Dioxide in Kilograms
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125m ³ and over	1.0 kg CO ₂ per 1.25m ³ space

(b) If discharging a fire-smothering gas other than carbon dioxide the installation shall have a capacity approved by the Chief Surveyor.

(4) The fixed installation required under subclause (2) of this clause may be manually or automatically operated, but any automatically operated installation shall be provided with an alarm giving audible warning to persons within the protected spaces.

(5) Where in the opinion of a Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of subclause (2) of this clause to be dispensed with.

(6) Every ship of Class VI of 45m in length and over fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the

automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel-storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel gas vapour.

9. Machinery spaces containing steam engines—(1) In every ship of Class VI of 45m in length and over there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) Foam fire extinguishers, each of at least 45 litres capacity or 1 carbon-dioxide fire extinguishers each of at least 16 kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure lubrication system and on to any part of the casing enclosing pressure-lubricated parts of turbines, engines, or associated gearing;

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with clause 7(1)(a) or clause 8(1)(a) of this Code;

Provided also that such extinguishers shall not be required in any space containing only auxiliary machinery of less than 375 kW.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

10. Fire extinguishing appliances in other machinery spaces—In every ship of Class VI of 45m in length and over where a fire hazard exists in any machinery space for which no specific provisions for fire extinguishing are required by clauses 7, 8 or 9 of this Code there shall be provided in or adjacent to that space a sufficient number of portable fire extinguishers to ensure that at least 1 extinguisher is not more than 10m walking distance from any position within that space unless equivalent means of fire extinction are provided.

11. Fire crew outfits—Every ship of Class VI of 45m in length or over shall carry 2 fire crew outfits for each 60m (or part thereof) of the length of the ship. Every such outfit shall comply with the requirements of clause 30 of the General Code and with the Performance Standard referred to therein.

(2) In any ship of Class VI of 45m in length and over provided with breathing apparatus of the air hose type where an air hose of more than 36m in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces at least 1 breathing apparatus of the self contained type shall be provided.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships of Classes VII, VIIA and VIII) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Ships of Classes VII, VIIA and VIII) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set

out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Classes VII, VIIA and VIII

1. Interpretation—In this Schedule, unless the context otherwise requires,—

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Classes VII, VIIA and VIII” are as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m:

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Classes VII and VIIA on the 1st day of July 1986 and

(b) in the case of a ship of Class VIII on the date of commencement of this notice.

For the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine;

and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire-extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special-category space” means any enclosed spaces above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

PART I

Ships of Classes VII, VIIA and VIII with A Gross Tonnage of 500 and Over

(Non-Passenger Ships With a Gross Tonnage of 500 or Over Engaged on International Voyages or in the Coastal Trade

2. Application—Part of this Code of Practice applies to Ships of Classes VII, VIIA and VIII with a gross tonnage of 500 or over, unless otherwise stated.

3. Automatic sprinkler, fire detection and fire alarm systems—(1) Every new ship to which Part 1 of this Code of Practice applies shall be provided with one of the following systems depending on which method of fire protection as prescribed in the Code of Practice issued under the Shipping (Construction) Regulations 1989 used in the construction of the ship.

(a) In ships in which “Method IC” Fire Protection is adopted, a fixed fire detection and fire alarm system of an approved type complying with requirements of the Performance Standard referred to in clause 29 of the General Code shall be so installed and arranged as to provide smoke detection and manually operated call points in all corridors, stairways and escape routes within accommodation spaces.

(b) In ships in which “Method IIC” Fire Protection is adopted, an automatic sprinkler, fire detection and fire alarm system of an approved type complying with the relevant requirements of the Performance Standard referred to in clause 28 of the General Code shall be so installed and arranged as to protect accommodation spaces, galleys and other service spaces, except spaces which afford no substantial fire risk such as void spaces and sanitary spaces. In addition, a

fixed detection and fire alarm system of an approved type complying with the requirements of the Performance Standard referred to in clause 29 of the General Code shall be so installed as to provide smoke detection and manually operated call points in all corridors, stairways and escape routes within accommodation spaces.

(c) In ships in which “Method IIIC” Fire Protection is adopted, a fixed fire detection and fire alarm system of an approved type complying with the requirements of the Performance Standard referred to in clause 29 of the General Code shall be so installed and arranged as to detect the presence of fire in all accommodation spaces and service spaces, except spaces which afford no substantial fire risk such as void spaces and sanitary spaces.

(2) Every existing ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall be provided in the accommodation spaces with electrically operated fire-alarm bells actuated from the navigation bridge and from manually operated call points suitably located throughout the accommodation spaces.

(3) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be additional to any electrically operated alarm signal actuated from the navigation bridge or control station unless the electrically operated alarm signal can also be operated from manually operated call points suitably located throughout the accommodation spaces.

(4) The fire-alarm bells required to be provided in compliance with subclause (2) of this clause shall be supplied with electrical power from 2 separate sources, 1 of which shall be the ship's emergency source of electric power, and may form part of the alarm system required in compliance with the Codes of Practice issued under The Shipping (Lifesaving Appliances) Regulations 1989.

4. Fire pumps—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of 1000 or over shall be provided with at least 2 power-operated fire pumps. Each such pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 fire hydrants, hoses, or nozzles provided in the ship, and shall comply with the requirements of clause 16(2) of the General Code.

(2) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 1000 but not less than 500 shall be provided with at least 2 power-operated fire pumps, each of which shall be capable of delivering at least 1 jet of water from any fire hydrant, hose or nozzle provided in the ship and shall comply with the requirements of clause 16(2) of the General Code. Provided that in ships of Class VIIA which do not proceed beyond coastal trade and ships of Class VIII, 1 of the fire pumps referred to in this subclause may be driven by the main engine.

(3) If, in any ship of Class VII, VIIA or VIII with a gross tonnage of 2000 or over, a fire in any one compartment could put all the fire pumps out of action, there shall be provided a fixed independently driven emergency fire pump complying with clause 16(7) of the General Code.

(4) If, in any ship of Class VII, VIIA or VII with a gross tonnage of less than 2000 but not less than 500, a fire in any one compartment would put all the fire pumps out of action there shall be provided a fixed independently driven emergency fire pump complying with clause 16(8) of the General Code.

Provided that in the case of such a ship with a gross tonnage of less than 1000 the emergency fire pump may be manually operated, complying with clause 16(9) of the General Code.

(5) Every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over with a periodically unattended machinery space or when only 1 person is required on watch, there shall be immediate water delivery from the fire main system at a suitable pressure, either by remote starting of one of the main fire pumps with remote starting from the navigating bridge and

fire control station, if any, or permanent pressurisation of the fire main system by one of the main fire pumps, except that the Chief Surveyor may waive this requirement for such ships with a gross tonnage of less than 1600 if the arrangement of the machinery space access makes it unnecessary.

5. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall be provided with a fire main, water-service pipes and hydrants, complying with clause 17 of the General Code and with fire hoses and nozzles complying with the provisions of clause 18 of the General Code.

(2) In every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over the arrangement of fire main and water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 2 jets of water not emanating from the same hydrant, 1 of which shall be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any part of any cargo spaces when empty including any ro-ro cargo space. Such hydrants shall be positioned near the accesses to the protected spaces;

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with 2 fire-hydrants, 1 on the port side and 1 on the starboard side;

(c) In any ship in which there is access to the machinery spaces by way of a shaft tunnel, a fire hydrant shall be provided in the tunnel at the end adjacent to the machinery space.

(3) Every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant in spaces containing oil-fired boilers or internal-combustion type machinery or in a shaft tunnel; and

(b) 1 hose and 1 dual-purpose nozzle for every 30m of length of the ship or part thereof, plus 1 spare fire hose and dual-purpose nozzle, but in no case less than 5 hoses and nozzles in any ship with a gross tonnage of 1000 or over and greater than 3 hoses and nozzles in the case of a ship with a gross tonnage of less than 1000 but not less than 500.

6. Portable fire extinguishers in accommodation and service spaces— Every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall be provided with a sufficient number of portable fire extinguishers to ensure that at least 1 such extinguisher will be readily available for use in any part of the accommodation or service spaces. The number of such extinguishers shall not be less than 5 in a ship with a gross tonnage of 1000 or over, and not less than 3 in a ship with a gross tonnage of 500 or over but less than 1000. In addition, at least 1 portable fire extinguisher and 1 fire blanket shall be provided in every galley and where the superficial deck area of any galley exceeds 45m² at least 2 portable fire extinguishers and 2 fire blankets shall be provided.

7. Fire protection arrangements in cargo spaces—(1) Except for cargo spaces covered by clauses 5 or 6 of the General Code, cargo spaces in every ship of Class VII, VIIA and VIII with a gross tonnage of 2000 or over shall be protected by a fixed fire smothering gas installation complying with the provisions of clause 24 of the General Code or by a fire-extinguishing system which in the opinion of the Chief Surveyor gives equivalent protection.

(2) The Chief Surveyor may exempt any ship from the requirement of subclause (1) of this clause if he is satisfied that:

(a) The cargo spaces therein are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the cargo spaces; and

(b) The ship is constructed for, and solely intended for carrying ore, coal, grain, unseasoned timber or cargoes which,

in the opinion of the Chief Surveyor, constitute a low fire risk; or

(c) To require compliance with the requirements of that subclause would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

8. Machinery spaces of Category A containing oil-fired boilers or oil-burning equipment—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over, there shall be provided for the protection of any space of Category A containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit:

(a) Any 1 of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code;

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the General Code.

(iii) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the General Code;

If the engine and boiler rooms are not entirely separate or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space.

(2) In addition to the requirements of subclause (1) of this clause there shall also be provided:

(a) In each boiler room at least 1 set of portable air-foam equipment complying with the requirements of the Performance Standard referred to in clause 27 of the General Code.

(b) In each firing space in each boiler room and in each space which contains any part of any oil fuel installation, at least 2 portable fire extinguishers.

(c) In each boiler room 1 or more foam fire extinguishers each of at least 135 litres capacity, or carbon dioxide fire extinguishers each of at least 45kg capacity placed in such positions so as to be readily accessible in the event of fire and shall be sufficient in number to enable the foam or carbon dioxide to be directed on to any part of the oil fuel installation.

(d) In each firing space a receptacle containing at least 250 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or alternatively, an additional portable fire extinguisher suitable for extinguishing oil fires.

9. Machinery spaces of Category A containing internal-combustion type machinery—In every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over there shall be provided for the protection of every machinery space of Category A:

(a) Any 1 of the fixed fire-extinguishing installations in subclause (1) of clause 8 of this Code.

(b) At least 1 set of portable air-foam equipment complying with the Performance Standard referred to in clause 27 of the General Code.

(c) Foam fire extinguishers, each of at least 45 litres capacity, or carbon dioxide extinguishers each of at least 16kg capacity sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards.

(d) Sufficient portable fire extinguishers suitable for extinguishing oil fires which shall be so located that no point in that space is more than 10m walking distance from an extinguisher provided there shall be not less than 2 such extinguishers.

10. Machinery spaces containing steam engines—In every

ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over, there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main propulsion or auxiliary purposes when such machinery has in the aggregate a total power output of not less than 375kW:

(a) Foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure-lubrication system and on to any part of the casing enclosing pressure-lubricated parts of turbines, engines, or associated gearing.

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with clause 8(a) of this Code.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

11. Fire extinguishing appliances in other machinery areas—In every ship of Class VII, VIIA or VIII where a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing are required by clauses 8, 9 or 10 of this Code there shall be provided in or adjacent to that space a sufficient number of portable fire extinguishers to ensure that at least 1 extinguisher is not more than 10m walking distance from any position within that space unless equivalent means of fire extinction are provided.

12. Fire crew outfits—(1) Except as provided in clauses 12, 13 and 14 of the General Code for combination, gas, and chemical carriers respectively every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall carry fire crew outfits, which shall comply with the requirements of clause 30 of the General Code and the Performance Standard referred to therein, in accordance with the following scale:

Gross Tonnage of Ship	Number of Outfits
500 or over but under 2,500	2
2,500 or over but under 4,000	3
4,000 or over	4

Provided that in tankers to which this clause applies the minimum number of fire crew outfits shall be 4.

(2) In every such ship provided with breathing apparatus of the air hose type where an air hose of more than 36m in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation, service, cargo or machinery spaces, at least 1 breathing apparatus of the self-contained type shall be provided.

13. International shore connection—Every ship of Class VII, VIIA or VIII with a gross tonnage of 500 or over shall be provided with at least 1 international shore connection, which shall comply with the requirements of the Performance Standard referred to in clause 19 of the General Code, to enable water to be supplied from another ship or from the shore to the fire main, and fixed provision shall be made to enable such a connection to be used on the port side and on the starboard side of the ship.

PART II

Ships of classes VII, VIIA and VIII With a Gross Tonnage of Less Than 500 But Not Less Than 150 (Non-Passenger Ships Engaged on International Voyages or in the Coastal Trade)

14. Application—Part II of this Code of Practice applies to Ships of Classes VII, VIIA and VIII with a gross tonnage of less than 500, but not less than 150.

15. Fire alarms—(1) Every ship of Class VII, or VIIA and every new ship of Class VIII, being in each case a ship with a gross tonnage of less than 500 but not less than 150 shall be provided in the accommodation spaces with electrically operated fire-alarm bells actuated from the navigating bridge and from manually operated call points suitably located throughout the accommodation spaces.

(2) Every existing ship of Class VIII with a gross tonnage of less than 500 but not less than 150 provided with fire alarms complying with subclause (1) of this clause shall be provided in the accommodation spaces with manually operated fire-alarm bells. Those bells shall be sufficient in number, so distributed, and of such type that in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout adjacent accommodation spaces.

(3) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be additional to any electrically operated alarm signal actuated from the navigating bridge or control station, unless the electrically operated system can also be actuated from manually operated call points suitably located throughout the accommodation spaces.

(4) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

(5) The fire-alarm bells required to be provided in compliance with subclause (1) of this clause shall be supplied with electrical power from 2 separate sources 1 of which shall be the ship's emergency source of electric power, and may form part of the alarm system required in compliance with the (Codes of Practice) issued pursuant to The Shipping (Lifesaving Appliances) Regulations 1989.

(6) In every new Ship of Class VIII of 45 m in length or less but not less than 24 m which is constructed of combustible materials or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

16. Fire pumps—Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 shall be provided with:

(a) At least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water from any fire hydrant hose, or nozzle provided in the ship and shall comply with the requirement of clause 16(2) of the General Code, and;

(b) Where in any such ship fitted with oil-fired boilers or internal-combustion type propelling machinery the pump required by paragraph (a) of this clause and its source of power and sea connection are situated within spaces containing such boilers or machinery, in a position outside such spaces an additional fire pump and its source of power and sea connection. If that pump is operated by power, it shall comply with the requirements of clause 16(8) of the General Code and if it is manually operated, it shall comply with clause 16(9) of the General Code.

17. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 shall be provided with a fire main, water-service pipes, and hydrants complying with the provision of clause 17 of the General Code.

(2) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 the

arrangements of fire main and water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause can be complied with when all watertight doors are closed; and

(c) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with at least 1 fire-hydrant.

Provided that a hydrant need not be provided in any such space if in the opinion of the Chief Surveyor water can be effectively directed into that space from a hydrant located outside the space.

(3) Every ship of Class VII, VIIA or VIII with a gross tonnage or less than 500 but greater than 150 shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant in spaces containing oil-fired boilers or internal combustion-type machinery; and

(b) At least 2 hoses, each with a dual-purpose nozzle for use outside such spaces.

18. Portable fire extinguishers in accommodation and service spaces—Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 shall be provided with at least 3 portable fire extinguishers, so situated as to be readily available for use in any part of the accommodation and service spaces. In addition, 1 portable extinguisher and 1 fire blanket shall be provided in every galley.

19. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 there shall be provided for the protection of any space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit:

(a) Any one of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the General Code;

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the General Code;

(iii) A high-expansion foam fire-extinguishing installation complying with the requirements of the Performance Standard referred to in clause 25 of the General Code;

If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space.

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers;

(c) In each firing space, a receptacle containing at least 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher suitable for use on oil fires.

(2) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclause (1) of this clause shall be provided in addition to any fire appliances required by of clause 20 of this Code.

Provided that if the largest single area over which oil fuel may spread in the event of a leakage is less than 9m² a foam fire extinguisher of at least 135 litres capacity or a carbon-dioxide fire extinguisher of at least 45 kg capacity may be provided instead of the fire appliances required by subclause (1)(a) of this clause.

20. Machinery spaces containing internal-combustion type machinery—In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 there shall be provided for the protection of every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher or not less than 45 litres capacity or a carbon-dioxide fire extinguisher of not less than 16 kg capacity;

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

21. Machinery spaces containing steam engines—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines.

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or a carbon-dioxide fire extinguisher of not less than 16 kg capacity.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that no less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire appliances provided in compliance with clauses 19 and 20 of this Code.

22. Fire crew outfits—Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 500 but not less than 150 shall be provided with at least 1 fire crew outfit, which shall comply with the requirements of clause 30 of the General Code and the Performance Standard referred to therein provided that in tankers to which this clause applies there shall be provided at least 2 fire crew outfits.

PART III

Ships of Classes VII, VIIA and VIII With a Gross Tonnage of Less Than 150

23. Application—Part III of this Code of Practice applies to Ships of Classes VII, VIIA and VIII with a gross tonnage of less than 150.

24. Fire alarms—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 shall be provided with 1 or more manually operated fire-alarm bells. Those bells shall be sufficient in number, so distributed, and of such type that in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout adjacent accommodation spaces.

(2) The alarm bells required to be provided in compliance with

sub-clause (1) of this clause shall be additional to any electrically operated alarm signal actuated from the navigating bridge or control station, unless the electrically operated system can also be actuated from manually operated call points suitably located throughout the accommodation spaces.

(3) The alarm bells required to be provided in compliance with sub-clause (1) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

(6) In every new Ship of Class VIII of 45 m in length or less but not less than 24 m which is constructed of combustible materials or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

25. Fire pumps—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of 24m in length or over shall be provided with at least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water from any fire hydrant, hose, or nozzle provided in the ship and shall comply with the requirements of clause 16(8) of the General Code.

(2) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of less than 24m in length shall be provided with at least 1 power-operated fire pump, which may be operated by the main engine and shall be capable of delivering a jet of water having a throw of at least 6m from any fire hydrant, hose or nozzle provided in the ship.

(3) Where, in any ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 the fire pump provided in compliance with the requirements of subclause (1) or subclause (2) of this clause is situated in the machinery space, there shall be provided in addition 3 fire buckets.

26. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 shall be provided with water-service pipes and hydrants complying with the provisions of clause 17 of the General Code and with fire hoses and nozzles complying with the provision of clause 18 of the General Code.

(2) In every ship of Class VII, VIIA or VIII the arrangement of water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with 1 fire hydrant.

Provided that in any such ship of less than 24m in length a hydrant need not be provided in any such space, if, in the opinion of the Chief Surveyor water can be effectively directed into that space from a hydrant located outside the space.

(3) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant fitted in spaces containing oil-fired boilers or internal-combustion type machinery; and

(b) At least 1 other hose and 1 dual-purpose nozzle.

27. Portable fire extinguishers—(1) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of 24m in length or over shall be provided with:

(a) At least 3 portable fire extinguishers, so situated as to be

readily available for use in the accommodation and service spaces; and

(b) Portable fire extinguishers in spaces containing oil-fired boilers or internal-combustion machinery in accordance with clauses 28 and 29 of this code.

(2) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of less than 24m but not less than 15m in length shall be provided with at least 4 portable fire extinguishers, and if of less than 15m in length with at least 3 portable fire extinguishers of which at least 2 shall be of a type suitable for extinguishing oil fires and shall be located in or adjacent to the machinery spaces and shall have a minimum capacity in accordance with the following scale.

Foam	9 litres
Carbon Dioxide	4.5 kg
Dry Powder	4.5 kg

The minimum capacities of the other fire extinguishers required under this subclause shall be in accordance with the following scale:

Water or Foam	9 litres
Carbon Dioxide	2 kg
Dry Powder	1 kg

(3) The fire extinguishers required by subclause (2) of this clause shall be distributed so as to be readily available in the event of a fire in any of the passenger, crew, or machinery spaces, and shall be located to the satisfaction of a Surveyor.

28. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150, every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit shall be provided with:

(a) At least 1 foam fire extinguisher of at least 135 litres capacity or 1 carbon-dioxide extinguisher of at least 45 kg capacity; and

(b) In each firing space and in each space which contains any part of any fuel installation, at least 1 portable fire extinguisher; and

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type the fire appliances required by subclause (1) of this clause shall be provided in addition to any fire appliances required by the provisions of clause 29 of this Code.

29. Machinery spaces containing internal-combustion type machinery—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of 24m in length or over, every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes shall be provided with:

(a) At least 1 foam fire extinguisher of at least 45 litres capacity or 1 carbon-dioxide fire extinguisher of at least 16 kg capacity.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) At least 2 portable fire extinguishers in every space containing main-propulsion machinery and at least 1 portable extinguisher in every space containing only auxiliary machinery.

(2) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of less than 24m in length, the spaces containing internal-combustion type propulsion or

auxiliary machinery shall be protected by the portable extinguishers required by clause 25(2) of this code.

(3) Every vessel of Class VII, VIIA or VIII with a gross tonnage of less than 150 fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(4) The fixed installation required under subclause (3) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide—mass required:

<i>Net Volume of Spaces to be Protected: Cubic metres</i>	<i>Mass of Carbon Dioxide in Kilograms</i>
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125 and over	1.0 kg CO ₂ per 1.25m ³ space

(b) If discharging a fire-smothering gas other than carbon dioxide the installation shall have a capacity approved by the Chief Surveyor.

(5) The fixed installation required under subclause (3) of this clause may be manually or automatically operated, but any automatically operated installation shall be provided with an alarm giving audible warning to persons within the protected spaces.

(6) Where in the opinion of the Chief Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of subclause (3) of this clause to be dispensed with.

(7) Where a ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of less than 24m in length fitted with propelling machinery which uses fuel having a flash point of less than 60°C is fitted with a fixed fire-smothering gas installation, the number of fire extinguishers required under the provisions of clause 27(2) of this Code may be reduced to 2 portable extinguishers, of which 1 shall be of a type suitable for extinguishing oil fires.

(8) Every ship of Class VII, VIIA or VIII fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel-storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel gas vapour.

30. Machinery spaces containing steam engines—(1) In every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon-dioxide fire extinguisher of not less than 16kg capacity;

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) At least 2 portable fire extinguishers in every space containing main-propulsion machinery and at least 1 portable extinguisher in every space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire extinguishers provided in accordance with the provisions of clause 28 of this Code.

31. Fire crew outfits—(1) Every ship of Class VII, VIIA or

VIII with a gross tonnage of less than 150 and of 24m in length or over shall carry at least 1 fire crew outfit which shall comply with the requirements of clause 30 of the General Code and the Performance Standard referred to therein.

(2) Every ship of Class VII, VIIA or VIII with a gross tonnage of less than 150 and of less than 24m in length shall carry a suitable axe and a safety lamp complying with the requirements of clause 30 of the General Code and subclauses (c) and (d) of the Performance Standard referred to therein.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships Class IX) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Class IX Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class IX

1. Interpretation— In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Classes IX” is as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m:

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category

A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached in the case of a ship of Class IX on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces” means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity.

“Special-category space” means any enclosed spaces above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle.

Other expressions defined in the Act have the meanings so defined.

PART I

Ships of Class IX of 45m in Length or Over

2. Application—Part 1 of this Code of Practice applies to Ships of Class IX of 45m in length or over plying within extreme limits.

3. Automatic Sprinkler, Fire Detection and Fire Alarm Systems—(1) Every new ship to which Part 1 of this Code of Practice applies with a gross tonnage of 500 and over shall be provided with 1 of the following systems depending on which method of fire protection, as prescribed in the Codes of

Practice issued under the Shipping (Construction) Regulations 1989, used in the construction of the ship.

(a) In ships in which “Method IC” Fire Protection is adopted, a fixed fire detection and fire alarm system of an approved type shall be so installed and arranged as to provide smoke detection and manually operated call points in all corridors, stairways and escape routes within accommodation spaces.

(b) In ships in which “Method IIC” Fire protection is adopted, an automatic sprinkler, fire detection and fire alarm system of an approved type complying with the relevant requirements of the Performance Standard referred to in clause 28 of the general code shall be so installed and arranged as to protect accommodation spaces, galleys and other service spaces, except spaces which afford no substantial fire risk such as void spaces and sanitary spaces. In addition, a fixed detection and fire alarm system of an approved type complying with the requirements of the Performance Standard referred to in clause 29 of the general code shall be so installed as to provide smoke detection and manually operated call points in all corridors, stairways and escape routes within accommodation spaces.

(c) In ships in which “Method IIIC” fire protection is adopted, a fixed fire detection and fire alarm system of an approved type complying with the requirements of the Performance Standard referred to in clause 29 of the general code shall be so installed and arranged as to detect the presence of fire in all accommodation spaces and service spaces, except spaces which afford no substantial fire risk such as void spaces and sanitary spaces.

(2) Every existing ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over shall be provided in the accommodation spaces with electrically operated fire-alarm bells actuated from the navigation bridge and from manually operated call points suitably located throughout the accommodation spaces.

(3) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be additional to any electrically operated alarm signal actuated from the navigation bridge or control station unless the electrically operated alarm signal can also be operated from manually operated call points suitably located throughout the accommodation spaces.

(4) The fire-alarm bells required to be provided in compliance with subclause (2) of this clause shall be supplied with electrical power from 2 separate sources, 1 of which shall be the ship’s emergency source of electric power, and may form part of the alarm system required in compliance with the Lifesaving Appliances (Codes of Practice).

4. Fire pumps—(1) Every ship to which Part I of this Code of Practice applies with a gross tonnage of 1000 or over shall be provided with at least 2 power-operated fire pumps. Each such pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 fire hydrants, hoses, or nozzles provided in the ship, and shall comply with the requirements of clause 16(2) of the general code.

(2) Every ship to which Part I of this Code of Practice applies with a gross tonnage of less than 1000 but not less than 500 shall be provided with at least 2 power-operated fire pumps, each of which shall be capable of delivering at least 1 jet of water from any fire hydrant, hose or nozzle provided in the ship and shall comply with the requirements of clause 16(2) of the general code.

(3) If in any ship to which Part I of this Code of Practice applies with a gross tonnage of 2000 or over, a fire in any one compartment could put all the fire pumps out of action, there shall be provided a fixed independent driven emergency fire pump complying with the provisions of clause 16(7) of the general code.

(4) If in any ship to which Part I of this Code of Practice applies with a gross tonnage of less than 2000 but not less

than 500 a fire in any one compartment would put all the fire pumps out of action there shall be provided a fixed independently driven emergency fire pump complying with the provisions of clause 16(8) of the general code.

Provided that in the case of such a ship with a gross tonnage of less than 1000 the emergency fire pump may be manually operated, complying with the requirements of clause 16(9) of the general code.

(5) Every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over with a periodically unattended machinery space or when only 1 person is required on watch there shall be immediate water delivery from the fire main system at a suitable pressure, either by remote starting of one of the main fire pumps with remote starting from the navigating bridge and fire control station, if any, or permanent pressurisation of the fire main system by one of the main fire pumps, except that the Chief Surveyor may waive this requirement for such ships with a gross tonnage of less than 1600 if the arrangement of the machinery space access makes it unnecessary.

5. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over shall be provided with a fire main, water-service pipes and hydrants, complying with the provisions of clause 17 of the general code, and with fire hoses and nozzles complying with the provisions of clause 18 of the general code.

(2) In every ship to which Part I of this Code of Practice applies which plies within extreme limits and with a gross tonnage of 500 or over the arrangement of fire main and water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 2 jets of water not emanating from the same hydrant, 1 of which shall be from a single length of hose, may reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated and any part of any cargo space when empty including any ro-ro cargo space. Such hydrants shall be positioned near the accesses to the protected spaces.

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with 2 fire hydrants, 1 on the port side and 1 on the starboard side.

(c) In any ship to which Part 1 of this Code of Practice applies in which there is access to the machinery spaces by way of a shaft tunnel, a fire hydrant shall be provided in the tunnel at the end adjacent to the machinery space.

(3) Every ship to which Part 1 of this Code of Practice applies which plies within extreme limits and with a gross tonnage of 500 or over shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant in spaces containing oil-fired boilers or internal-combustion type machinery or in a shaft tunnel; and

(b) 1 hose and 1 dual-purpose nozzle for every 30m of length of the ship or part thereof, plus 1 spare fire hose and dual-purpose nozzle; but in no case less than 5 hoses and nozzles in any ship with a gross tonnage of 1000 or over and not less than 3 hoses and nozzles in the case of a ship with a gross tonnage of less than 1000 but not less than 500.

6. Portable fire extinguishers: In accommodation and service spaces—Every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over shall be provided with a sufficient number of portable fire extinguishers to ensure that at least 1 such extinguisher will be readily available for use in any part of the accommodation or service spaces. The number of such extinguishers shall not be less than 5 in a ship with a gross tonnage of 1000 or over and not less than 3 in a ship with a gross tonnage of 500 or over but under 1000. In addition, at least 1 portable fire extinguisher and 1 fire blanket shall be provided in every galley and where

the superficial deck area of any galley exceeds 45m² at least 2 portable fire extinguishers and 2 fire blankets shall be provided.

7. Fire protection arrangements in cargo spaces—(1) Except for cargo spaces covered by clauses 5 or 6 of the General Code cargo spaces in every ship of this class and length which plies within extreme limits and with a gross tonnage of 2000 or over shall be protected by a fixed fire smothering gas installation complying with clause 24 of the general code or by a fire-extinguishing system which in the opinion of the Chief Surveyor gives equivalent protection.

(2) The Chief Surveyor may exempt any ship from the requirement of subclause (1) of this clause if he is satisfied that:

(a) The cargo spaces therein are provided with steel hatch covers and effective means of closing all ventilators and other openings leading to the cargo spaces; and

(b) The ship is constructed for, and solely intended for carrying ore, coal, grain, unseasoned timber or cargoes which, in the opinion of the Chief Surveyor, constitute a low fire risk; or

(c) To require compliance with the requirements of that subclause would be unreasonable on account of the short duration of the voyages on which the ship is engaged.

8. Machinery spaces of Category A containing oil-fired boilers or oil-burning equipment—In every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over, there shall be provided for the protection of any machinery space of Category A containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit:

(a) Any 1 of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code;

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code.

(iii) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the general code;

and if the engine and boiler rooms are not entirely separate or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space.

(b) In each boiler room at least 1 set of portable air-foam equipment complying with the requirements of the Performance Standard referred to in clause 27 of the general code.

(c) In each firing space in each boiler room and in each space which contains any part of any oil fuel installation, at least 2 portable fire extinguishers.

(d) In each boiler room 1 or more foam fire extinguisher each of at least 135 litres capacity, or carbon dioxide fire extinguisher each of at least 45kg capacity placed in such positions so as to be readily accessible in the event of fire and shall be sufficient in number to enable the foam or carbon dioxide to be directed on to any part of the oil fuel installation.

(e) In each firing space a receptacle containing at least 250 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or alternatively, an additional portable fire extinguisher suitable for extinguishing oil fires.

9. Machinery spaces of Category A containing internal-combustion type machinery—In every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over there shall be provided for the protection of every machinery space of Category A:

(a) Any 1 of the fixed fire-extinguishing installations in subclause (1) of clause 8 of this Code,

(b) At least 1 set of portable air-foam equipment complying with the Performance Standard referred to in clause 27 of the general code.

(c) Foam fire extinguishers, each of at least 45 litres capacity, or carbon dioxide extinguishers each of at least 16kg capacity sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards, and,

(d) Sufficient portable fire extinguishers suitable for extinguishing oil fires which shall be so located that no point in that space is more than 10m walking distance from an extinguisher provided there shall be not less than 2 such extinguishers.

10. Machinery spaces containing steam engines—In every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over, there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main propulsion or auxiliary purposes when such machinery has in the aggregate a total power output of not less than 375kW:

(a) Foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the pressure-lubrication system and on to any part of the casing enclosing pressure-lubricated parts of turbines, engines, or associated gearing.

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with clause 8(a) of this Code.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

11. Fire extinguishing appliances in other machinery areas—In every ship to which Part I of this Code of Practice applies where a fire hazard exists in any machinery space for which no specific provisions for fire-extinguishing are required by clauses 8, 9, or 10 of this Code there shall be provided in or adjacent to that space a sufficient number of portable fire extinguishers to ensure that at least 1 extinguisher is not more than 10m walking distance from any position within that space unless equivalent means of fire extinction are provided.

12. Fire crew outfits—(1) Except as provided in clauses 12, 13 and 14 of the General Code for combination, gas, and chemical carriers respectively every ship to which Part I of this Code of Practice applied with a gross tonnage of 500 or over shall carry fire crew outfits, which shall comply with the requirements of clause 30 of the general code and the Performance Standard referred to therein, in accordance with the following scale:

Gross Tonnage of Ship	Number of Outfits
500 or over but under 2500	2
2500 or over but under 4000	3
4000 or over	4

Provided that in tankers, to which this clause applies, the minimum number of fire crew outfits shall be 4.

(2) In every such ship provided with breathing apparatus of the air hose type where an air hose of more than 36m in length would be necessary to reach from the open deck well clear of any hatch or doorway to any part of the accommodation,

service, cargo or machinery spaces, at least 1 breathing apparatus of the self-contained type shall be provided.

13. International shore connection—Every ship to which Part I of this Code of Practice applies with a gross tonnage of 500 or over shall be provided with at least 1 international shore connection, which shall comply with the requirements of the Performance Standard referred to in clause 19 of the general code, to enable water to be supplied from another ship or from the shore to the fire main, and fixed provision shall be made to enable such a connection to be used on the port side and on the starboard side of the ship.

PART II

Ships of Class IX of 45m in Length or Over and With a Gross Tonnage of Less Than But Not Less Than 150

14. Application—Part II of the Code of Practice applies to Ships of Class IX of 45m in length or over and with a gross tonnage of less than 500, but not less than 150 plying with extreme limits.

15. Fire alarms—(1) Every new ship to which Part II of this Code of Practice applies shall be provided in the accommodation spaces with electrically operated fire-alarm bells actuated from the navigating bridge and from manually operated call points suitably located throughout the accommodation spaces.

(2) Every existing ship to which Part II of this Code of Practice applies not provided with fire alarms complying with subclause (1) of this clause shall be provided in the accommodation spaces with manually operated fire-alarm bells. Those bells shall be sufficient in number, so distributed, and of such type that in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout adjacent accommodation spaces.

(3) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be additional to any electrically operated alarm signal actuated from the navigating bridge or control station, unless the electrically operated system can also be actuated from manually operated call points suitably located throughout the accommodation spaces.

(4) The alarm bells required to be provided in compliance with subclause (2) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

(5) The fire-alarm bells required to be provided in compliance with subclause (1) of this clause shall be supplied with electrical power from 2 separate sources 1 of which shall be the ship's emergency source of electric power, and may form part of the alarm system required in compliance with the Codes of Practice issued under The Shipping (Lifesaving Appliances) Regulations 1989.

16. Fire pumps—Every ship in to which Part II of this Code of Practice applies shall be provided with:

(a) At least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water from any fire hydrant hose, or nozzle provided in the ship and shall comply with the requirement of clause 16(2) of the general code, and;

(b) Where in any such ship fitted with oil-fired boilers or internal-combustion type propelling machinery the pump required by paragraph (a) of this clause and its source of power and sea connection are situated within spaces containing such boilers or machinery, in a position outside such spaces an additional fire pump and its source of power and sea connection. If that pump is operated by power, it shall comply with the requirements of clause 16(8) of the general code and if it is manually operated, it shall comply with clause 16(9) of the general code.

17. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Every ship to which Part II of this Code of

Practice applies shall be provided with a fire main, water-service pipes, and hydrants complying with the provision of clause 17 of the general code.

(2) In every ship to which Part II of this Code of Practice applies the arrangements of fire main and water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) In accommodation spaces, service spaces, and machinery spaces, the requirements of paragraph (a) of this subclause can be complied with when all watertight doors are closed; and

(c) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with at least 1 fire-hydrant.

Provided that a hydrant need not be provided in any such space if in the opinion of a Surveyor water can be effectively directed into that space from a hydrant located outside the space.

(3) Every ship to which Part II of this Code of Practice applies shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant in spaces containing oil-fired boilers or internal combustion-type machinery; and

(b) At least 2 hoses, each with a dual-purpose nozzle for use outside such spaces.

18. Portable fire extinguishers in accommodation and service spaces—Every ship to which Part II of this Code of Practice applies shall be provided with at least 3 portable fire extinguishers, so situated as to be readily available for use in any part of the accommodation and service spaces. In addition, 1 portable extinguisher and 1 fire blanket shall be provided in every galley.

19. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship to which Part II of this Code of Practice applies there shall be provided for the protection of any space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit:

(a) Any one of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code;

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code;

(iii) A high-expansion foam fire-extinguishing installation complying with the requirements of the Performance Standard referred to in clause 25 of the general code;

and, if the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space.

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers;

(c) In each firing space, a receptacle containing at least 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher suitable for use on oil fires.

(2) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary

machinery of internal-combustion type, the fire appliances required by subclause (1) of this clause shall be provided in addition to any fire appliances required by the provisions of clause 20 of this Code.

Provided that if the largest single area over which oil fuel may spread in the event of a leakage is less than 9m² a foam fire extinguisher of at least 135 litres capacity or a carbon-dioxide fire extinguisher of at least 45 kg capacity may be provided instead of the fire appliances required by subclause (1)(a) of this clause.

20. Machinery spaces containing internal-combustion type machinery—In every ship to which Part II of this Code of Practice applies there shall be provided for the protection of every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher or not less than 45 litres capacity or a carbon-dioxide fire extinguisher of not less than 16 kg capacity;

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

21. Machinery spaces containing steam engines—(1) In every ship to which Part II of this Code of Practice applies there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or a carbon-dioxide fire extinguisher or not less than 16 kg capacity,

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and,

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that no less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire appliances provided in compliance with clauses 19 and 20 of this Code.

22. Fire crew outfits—Every ship to which Part II of this Code of Practice applies shall be provided with at least 1 fire crew outfit, which shall comply with the requirements of clause 30 of the general code and the Performance Standard referred to therein provided that in tankers to which this clause applies there shall be provided at least 2 fire crew outfits.

PART III

Ships of Class IX of 45m in Length or Over With a Gross Tonnage of Less Than 150

23. Application—Part III of this Code of Practice applies to Ships of Class IX of 45m in length or over with a gross tonnage of less than 150 plying within extreme limits.

24. Fire alarms—(1) Every ship to which Part III of this Code of Practice applies shall be provided with 1 or more manually operated fire-alarm bells. Those bells shall be sufficient in number, so distributed, and of such type that in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily

accessible and is clearly audible throughout adjacent accommodation spaces.

(2) The alarm bells required to be provided in compliance with sub-clause (1) of this clause shall be additional to any electrically operated alarm signal actuated from the navigating bridge or control station, unless the electrically operated system can also be actuated from manually operated call points suitably located throughout the accommodation spaces.

(3) The alarm bells required to be provided in compliance with sub-clause (1) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

25. Fire pumps—(1) Every ship to which Part III of this Code of Practice applies shall be provided with at least 1 power-operated fire pump, which shall be capable of delivering at least 1 jet of water from any fire hydrant, hose, or nozzle provided in the ship and shall comply with the requirements of clause 16(8) of the general code.

(2) Every ship to which Part III of this Code of Practice applies shall be provided with at least 1 power-operated fire pump, which may be operated by the main engine and shall be capable of delivering a jet of water having a throw of at least 6m from any fire hydrant, hose or nozzle provided in the ship.

(3) Where, in any ship to which Part III of this Code of Practice applies the fire pump provided in compliance with the requirements of subclause (1) or subclause (2) of this clause is situated in the machinery space, there shall be provided in addition 3 fire buckets.

26. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Every ship to which Part III of this Code of Practice applies shall be provided with water-service pipes and hydrants complying with the provisions of clause 17 of the general code and with fire hoses and nozzles complying with the provision of clause 18 of the general code.

(2) In every ship of this class and length which plies within extreme limits the arrangement of water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with 1 fire hydrant.

(3) Every ship to which Part III of this Code of Practice applies shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant fitted in spaces containing oil-fired boilers or internal-combustion type machinery; and

(b) At least 1 other hose and 1 dual-purpose nozzle.

27. Portable fire extinguishers—(1) Every ship to which Part III of this Code of Practice applies shall be provided with:

(a) At least 3 portable fire extinguishers, so situated as to be readily available for use in the accommodation and service spaces; and

(b) Portable fire extinguishers in spaces containing oil-fired boilers or internal-combustion machinery in accordance with the provisions of clauses 28 and 29 of this Code.

28. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship to which Part III of this Code of Practice applies every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit shall be provided with:

(a) At least 1 foam fire extinguisher of at least 135 litres capacity or 1 carbon-dioxide extinguisher of at least 45 kg capacity; and

(b) In each firing space and in each space which contains

any part of any fuel installation, at least 1 portable fire extinguisher; and

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted, in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclause (1) of this clause shall be provided in addition to any fire appliances required clause 29 of this Code.

29. Machinery spaces containing internal-combustion type machinery—(1) In every ship to which Part III of this Code of Practice applies every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes shall be provided with:

(a) At least 1 foam fire extinguisher of at least 45 litres capacity or 1 carbon-dioxide fire extinguisher of at least 16 kg capacity,

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and,

(b) At least 2 portable fire extinguisher in every space containing main-propulsion machinery and at least 1 portable extinguisher in every space containing only auxiliary machinery.

(2) Every ship to which Part III of this Code of Practice applies fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(3) The fixed installation required under subclause (3) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide—mass required

Net Volume of Spaces to be Protected: Cubic Metres	Mass of Carbon Dioxide in Kilograms
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125 and over	1.0 kg CO ₂ per 1.25m ³ space

(b) If discharging a fire-smothering gas other than carbon dioxide the installation shall have a capacity approved by the Chief Surveyor.

(4) The fixed installation required under subclause (3) of this clause may be manually or automatically operated, but any automatically operated installation shall be provided with an alarm giving audible warning to persons within the protected spaces.

(5) Where in the opinion of the Chief Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of subclause (3) of this clause to be dispensed with.

(6) Every ship to which Part III of this Code of Practice applies fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel-storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel gas vapour.

30. Machinery spaces containing steam engines—(1) In every ship to which Part III of this Code of Practice applies there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres

capacity or 1 carbon-dioxide fire extinguisher of not less than 16kg capacity;

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) At least 2 portable fire extinguishers in every space containing main-propulsion machinery and at least 1 portable extinguisher in every space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire extinguishers provided in accordance with the provisions of clause 25 of this Code.

31. Fire crew outfits—(1) Every ship to which Part III of this Code of Practice applies shall carry at least 1 fire crew outfit which shall comply with the requirements of clause 30 of the general code and the Performance Standard referred to therein.

PART IV

Ships of Class IX of Less Than 45m in Length

32. Application—Part IV of this Code of Practice applies to Ships of Class IX of less than 45m in length.

33. Fire alarms—In every new Ship of Class IX of less than 45m, but not less than 24m which is constructed of combustible materials or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

34. Fire pumps—(1) Except as provided in clauses 4, 16 and 25 of this code every ship of Class IX of 24m in length or over shall be provided with at least 1 power-operated fire pump which shall be capable of delivering at least 1 jet of water from any fire hydrant, hose, or nozzle provided in the ship and shall comply with the requirements of clause 16(8) of the general code.

(2) Every ship of Class IX of less than 24m in length but not less than 15m in length shall be provided with at least 1 power-operated fire pump, which may be operated by the main engine and shall be capable of delivering a jet of water having a throw of at least 6m from any fire hydrant, hose, or nozzle provided in the ship.

(3) Every ship of Class IX of less than 15m in length shall be provided with either:

(a) one power-operated or manually-operated fire pump having a permanent sea connection. That pump shall be capable of delivering a jet of water having a throw of at least 6m through any fire hydrant, hose, or nozzle provided in the ship; or

(b) At least 2 fire buckets provided that in any ship of Class IX of less than 6m in length which does not proceed beyond river limits the minimum number of fire buckets may be 1.

(4) Except as provided in clause 3 of this Code every ship of Class IX of 24m in length or over shall be provided with a manual or power-operated emergency fire pump.

If the emergency fire pump is power operated, it shall comply with the requirements of clause 16(8) of the general code, and if it is manually operated it shall comply with the requirements of clause 16(9) of the general code.

(5) Where, in any ship of Class IX of less than 24m in length the fire pump provided in compliance with the requirements of subclause (2) or subclause (3) of this clause is situated in the

machinery space, there shall be provided in addition 2 fire buckets.

35. Fire main, water-service pipes, hydrants, hoses and nozzles—(1) Except as provided in clauses 5, 17 and 26 of this Code of Practice every Ship of Class IX to which Part IV of this Code of Practice applies shall be provided with fire main water service pipes, and hydrants with hoses and nozzles whereby at least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty.

Provided that this requirement shall not apply to any ship of Class IX of less than 6m in length in which a fire bucket is carried instead of a fire pump, in accordance with the provisions of clause 34(3) of this Code.

(2) The arrangement of fire main, water-service pipes, hydrants, hoses, and nozzles shall be such that:

(a) The requirements of this clause can be complied with when all watertight doors are closed; and

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with at least 1 fire hydrant.

Provided that in any ship of Class IX of less than 24m in length a hydrant need not be provided in any such space if, in the opinion of a Surveyor water can be effectively directed into that space from a hydrant located outside the space.

(3) Except as provided in clauses 5, 17, and 26 of this Code every ship of Class IX shall be provided with:

(a) 1 hose and 1 dual-purpose nozzle for every hydrant fitted in spaces containing oil-fired boilers or internal-combustion type machinery; and

(b) At least 1 other hose and 1 dual-purpose nozzle.

(c) Provided that if only 1 hydrant is fitted in the ship only 1 hose and 1 dual-purpose nozzle need be provided.

36. Portable fire extinguishers—(1) Except as provided in clauses 6, 17 and 27 of this Code every Ship of Class IX of 24m in length or over shall be provided with:

(a) Sufficient portable fire extinguishers to ensure that at least 1 such extinguisher will be readily available for use in any part of the accommodation or service spaces, with a minimum of 3 such extinguishers; and

(b) At least one portable fire extinguisher and 1 fire blanket in any galley; and

(c) Portable fire extinguishers in spaces containing oil-fired boilers or internal-combustion machinery in accordance with the provisions of clauses 37 and 38 of this Code.

(2) Every ship of Class IX of less than 24m in length shall be provided with portable fire extinguishers in accordance with the following table:

Length of Ship	Number of Extinguishers
Under 9m	1
9m or more but under 15m	2
15m or more but under 24m	3

(3) The fire extinguisher in every ship of this class of under 9m in length and at least 1 of the extinguishers in every ship of 9m and under 24m in length as required under subclause (1) of this clause shall be of a type suitable for extinguishing oil fires, and shall be located in or adjacent to the machinery spaces and shall have a minimum capacity in accordance with the following scale.

Foam	9 Litres
Carbon dioxide	4.5 kg
Dry powder	4.5 kg

The minimum capacities of the other fire extinguishers

required under subclause (1) of this clause shall be in accordance with the following scale:

Water or Foam	9 Litres
Carbon Dioxide	2 kg
Dry powder	1 kg

(4) The fire extinguishers required by subclause (1) of this clause shall be distributed so as to be readily available in the event of a fire in any of the accommodation spaces, service spaces or machinery spaces, and shall be located to the satisfaction of a Surveyor.

37. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship of Class IX of 24m in length or over except as provided in Clauses 6, 19 and 28 of this Code, every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit shall be provided with:

(a) Either

(i) one of the following fixed fire-extinguishing installations:

(1) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code;

(2) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code;

(3) A high-expansion foam fire-extinguishing system complying with the requirements of the Performance Standard referred to in clause 25 of the general code, or

(ii) At least 1 foam fire extinguisher of not less than 135 litres capacity or at least 1 carbon-dioxide extinguisher of not less than 45 kg capacity. The extinguishers shall be sited so as to be readily accessible in the event of fire, and shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil fuel installation.

If the engine and boiler rooms are not entirely separated from each other, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space; and

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers suitable for use in oil fires; and

(c) In each firing space, a receptacle containing at least 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) In every ship of Class IX of less than 24m in length, every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit, shall be provided with:

(a) 1 or more foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide extinguishers, each of at least 16kg capacity. The extinguishers shall be sited so as to be readily accessible in the event of fire and shall be sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room or spaces containing any part of the oil-fuel installation; and

(b) In each firing space and in each space which contains any part of any oil-fuel unit, at least 1 portable fire extinguisher, suitable for use in oil fires; and

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(3) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by subclauses (1) and (2) of this clause shall be

provided in addition to any fire appliances required by the provisions of clause 38 of this Code.

Provided that if the largest single area over which oil fuel may be spread in the event of a leakage is less than 9m² the provisions of subclause (1)(a) or, as the case may require, subclause (2)(a) of this clause shall be complied with by the provision of 1 foam fire extinguisher of at least 135 litres capacity or 1 carbon-dioxide fire extinguisher of at least 45kg capacity.

38. Machinery spaces containing internal-combustion type machinery—(1) In every ship of Class IX of 24m in length or over, except as provided in clauses 9, 20, and 29 of this Code, every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes shall be provided with:

(a) 1 foam fire extinguisher of at least 45 litres capacity or 1 carbon-dioxide fire extinguisher of at least 16 kg capacity.

Provided that such an extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire extinguishing installation fitted in compliance with clause 37(1)(a)(i) of this Code. Provided also that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW; and

(b) Sufficient portable fire extinguishers, so located that a portable extinguisher is not more than 10m walking distance from any point in that space;

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing, only auxiliary machinery.

(2) In every ship of Class IX of less than 24m in length, the spaces containing internal-combustion type propulsion or auxiliary machinery shall be protected by the portable extinguishers required by clause 36(2) of this Code.

(3) Except as provided in clause 29(2) of this Code every ship of Class IX fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(4) The fixed installation required under subclause (3) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide—mass required.

Net Volume of Spaces to be Protected: Cubic Metres	Mass of Carbon Dioxide in Kilograms
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125 and over	1.0 kg CO ₂ per 1.25m ³ space

(5) The fixed installation required under subclause (3) of this clause shall, if discharging fire-smothering gas other than carbon dioxide have a capacity approved by the Chief Surveyor. The fixed installation referred to above may be manually or automatically operated, provided any automatically operated installation is provided with an alarm giving audible warning to persons within the protected spaces.

(6) Where in the opinion of the Chief Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of subclause (3) of this clause to be dispensed with.

(7) Where a ship of Class IX of less than 24m in length fitted with propelling machinery which uses fuel having a flash point of less than 60°C is fitted with a fixed fire-smothering gas installation, the number of fire extinguishers required under

the provisions of clause 36(2) of this Code may be reduced to 2 portable extinguishers of which 1 shall be of a type suitable for extinguishing oil fires for ships of 15m in length and over.

(8) Every Ship of Class IX to which Part IV of this Code of Practice applies, fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel gas vapour.

39. Machinery spaces containing steam engines—(1) In every ship of Class IX except as provided in clauses 9, 19 and 27 of this Code there shall be provided for the protection of every space containing steam turbines of enclosed pressure-lubricated steam engines used for main propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon-dioxide fire extinguisher of not less than 16kg capacity.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW; and

(b) At least 2 portable fire extinguishers in any space containing main-propulsion machinery and at least 1 portable extinguisher in any space containing only auxiliary machinery.

(2) The fire extinguishers specified in subclause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire extinguishers provided in compliance with the requirements of clause 36 of this code.

40. Fire Crew Outfits—(1) Except as provided in clauses 12, 22 and 31 of this Code every ship of Class IX of 24m in length or over which plies beyond river limits shall carry at least 1 fire crew outfit, which shall comply with the requirements of clause 30 of the general code and the Performance Standard referred to therein.

(2) Every ship of Class IX of 24m in length or over which does not ply beyond river limits shall carry at least 1 suitable axe.

(3) Every ship of Class IX of less than 24m in length but not less than 9m in length shall be provided with at least 1 suitable axe.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for Ships of Class X) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for Class X Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for Ships of Class X

1. Interpretation—In this Schedule, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952:

“Accommodation spaces” means passenger spaces, public

spaces, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Class X” is as stated in The Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“Existing ship” means a ship which is not a new ship.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m:

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached in the case of a ship of Class X on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) means a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the

accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² per tonne of oil capacity:

“Special-category space” means any enclosed spaces above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expressions defined in the Act have the meanings so defined.

Part I

Ships of Class X of 55m in Length or Over

2. Application—Part I of this Code of Practice applies to Ships of Class X of 55m in length or over.

3. Automatic sprinkler, fire detection and fire alarm systems—(1) Every new ship to which Part I of this Code of Practice applies shall be provided in the accommodation and service spaces, with an automatic sprinkler, fire detection and fire alarm system complying with the requirements of the performance standard referred to in clause 28 of the general code.

Provided that such an installation shall not be required in any ship where the internal divisional bulkheads in accommodation and service spaces are constructed in non-combustible material with insulation valves acceptable to the Chief Surveyor.

Provided further that such an installation shall not be required in any ship where there is no restriction on the type of internal divisional bulkhead but where the area of any accommodation or service spaces bounded by bulkheads constructed in non-combustible material with insulation valves acceptable to the Chief Surveyor does not exceed 50 m² in area and a fixed fire alarm and detection system is provided complying with the requirements of the Performance Standard referred to in clause 29 of the general code.

The Chief Surveyor may increase the limitation on area in respect of public spaces. Neither system need be installed in void spaces, sanitary spaces and spaces which afford no substantial fire risk.

(2) Every existing ship to which Part I of this Code of Practice applies not complying with the provisions of sub-clause (1) of this clause shall be provided in the accommodation spaces with either:

(a) Electrically operated fire-alarm bells actuated from the navigating bridge and from manually operated call points suitably located throughout the accommodation spaces. Such fire alarm bells shall be supplied with electrical power from 2 separate sources of which 1 shall be the ship's emergency source of electrical power; or

(b) Manual fire alarm bells sufficient in number, so distributed and of such type that in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout the adjacent accommodation spaces.

(3) The alarm bells required to be provided in compliance with

sub-clause (2)(a) of this clause shall be additional to any electrically operated alarm signal actuated from the navigating bridge or control station unless the electrically operated system can also be actuated from manually operated call points suitably located throughout the accommodation spaces.

(4) The alarm bells required to be provided in compliance with sub-clause (2)(b) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

4. Fire pumps—(1) At least 2 power operated fire pumps shall be provided in every ship to which Part I of the Code of Practice applies. Each such pump shall be capable of delivering the jets of water required by clause 5 of this Code and shall comply with the requirements of clause 16(3) of the general code.

(2) If in any ship to which Part I of this Code of Practice applies a fire in any 1 compartment could put all the fire pumps out of action, there shall be provided an emergency fire pump which shall comply with the requirements of clause 16(8) of the general code. Provided that in any ship of this class and length but less than 75m the emergency fire pump may be manually operated and shall comply with the requirements of clause 16(9) of the general code.

5. Fire main, water-service pipes, hydrants, hoses, and nozzles—(1) Every ship to which Part I of this Code of Practice applies shall be provided with a fire main, water-service pipes, and hydrants complying with the provisions of clause 17 of the general code and with fire hoses and nozzles complying with the provisions of clause 18 of the general code.

(2) In every ship to which Part I of this Code of Practice applies the arrangements of fire main and water service pipes and the number and position of fire hydrants shall be such that:

(a) At least 2 jets of water not emanating from the same hydrant, 1 of which shall be from a single length of fire hose, may reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) Isolating valves separating the section of the fire main within the machinery space containing the main fire pump or pumps from the rest of the fire main shall be fitted in an easily accessible and tenable position outside the machinery spaces. The fire main shall be so arranged that when the isolating valves are shut all the hydrants on the ship, except those in the machinery space referred to above, can be supplied with water by a fire pump not located in this machinery space through pipes which do not enter this space. Provided that the Chief Surveyor may permit short lengths of the emergency fire pump suction and discharge piping to penetrate the machinery space if it is impracticable to route it externally provided that the integrity of the fire main is maintained by the enclosure of the piping in a substantial steel casing; and

(c) In accommodation spaces, service spaces, and machinery spaces the requirements of paragraph (a) of this sub clause and clause 17(4) of the General Code can be complied with when all watertight doors are closed; and,

(d) One hydrant shall be located near the entrance of the space to be protected.

(3) Every ship to which Part I of this Code of Practice applies shall be provided with a hose and dual purpose nozzle for each hydrant fitted in the ship. In addition there shall be 1 spare hose.

6. Portable fire extinguishers in control stations, accommodation and service spaces—Every ship to which Part I of this Code of Practice applies shall be provided with a sufficient number of portable fire extinguishers to ensure that at least 1 such extinguisher will be readily available for use in control stations and in any part of the accommodation and service spaces. The number of such extinguishers shall not be

less than 5. In addition, at least 1 portable fire extinguisher and 1 fire blanket shall be provided in every galley.

7. Machinery spaces containing oil-fired boilers or oil-burning equipment—In every ship to which Part I of this Code of Practice applies there shall be provided for the protection of any space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit—

(a) One of the following fixed fire extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code.

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code.

(iii) A high expansion foam fire-extinguishing installation complying with the requirements of the Performance Standard referred to in clause 25 of the general code;

If the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space:

(iv) In general steam should not be used as a fire-extinguishing medium in fixed fire-extinguishing systems except as provided in addition to those referred to above as provided in clause 24(2) of the General Code.

(b) At least 1 set of portable air foam equipment complying with the requirements of the Performance Standard referred to in clause 27 of the general code in every boiler room;

(c) At least 2 portable fire extinguishers in each firing space in each boiler room and in each space in which part of the fuel oil installation is situated.

(d) At least 1 foam extinguisher of not less than 135 litres capacity, or at least 1 carbon dioxide fire extinguisher of not less than 45 kg capacity positioned as to be readily accessible in the event of fire and sufficient in number to enable foam or carbon dioxide to be directed on to any part of the boiler room and spaces containing any part of the oil fuel installation. The Chief Surveyor may relax this requirement having regard to the size and nature of the space to be protected.

(e) In each firing space, a receptacle containing in the case of a ship of 75m in length and over 250 litres or in the case of a ship of 55m in length or over but less than 75m, 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or alternatively, an additional portable fire-extinguisher.

8. Machinery spaces containing internal-combustion type machinery—In every ship to which Part I of this Code of Practice applies there shall be provided for the protection of every space containing internal-combustion type machinery used for main-propulsion or auxiliary purposes when such machinery has a total power output of not less than 375kW;

(a) One of the following fixed fire extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code.

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code.

(iii) A high-expansion foam fire-extinguishing installation complying with the requirements of the Performance Standard referred to in clause 25 of the general code.

Provided that such installation shall not be required in any machinery space containing machinery with an aggregate power of less than 375 kW.

(b) At least 1 set of portable air foam equipment complying

with the requirements of the Performance Standard referred to in clause 27 of the general code.

(c) 1 or more foam fire extinguishers of not less than 45 litres capacity or carbon-dioxide fire extinguishers of not less than 16 kg capacity positioned as to be readily accessible in the event of fire and sufficient in number to enable foam or carbon dioxide to be directed on to any part of the fuel and lubricating oil pressure systems, gearing and other fire hazards.

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery having an aggregate power of less than 375 kW.

(d) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space:

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

9. Machinery spaces containing steam engines—In every ship to which Part I of this Code of Practice applies there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main propulsion or auxiliary purposes when such machinery has a total output of not less than 375 kW.

(a) Foam fire extinguishers, each of at least 45 litres capacity, or carbon-dioxide fire extinguishers, each of at least 16 kg capacity, sufficient in number to enable foam or carbon dioxide to be directed on to any part of the casing enclosing pressure-lubricated parts of turbines, engines, or associated gearing:

Provided that such extinguishers shall not be required if equivalent protection is provided in such spaces by a fixed fire-extinguishing installation fitted in compliance with clauses 7(a) or 8(a) of this Code.

(b) Sufficient portable fire extinguishers so located that a portable extinguisher is not more than 10m walking distance from any point in the space:

Provided that not less than 2 such extinguishers shall be required in any space containing main propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

10. Fire crew outfits—Every ship to which Part I of this Code of Practice applies shall carry at least 2 fire crew outfits which shall comply with the requirements of clause 30 of the general code and with the Performance Standard referred to therein.

11. International shore connection—Every ship to which Part I of this Code of Practice applies shall be provided with at least 1 international shore connection, which shall comply with the requirements of the Performance Standard referred to in clause 19 of the general code to enable water to be supplied from another ship or from the shore to the fire main, and fixed provision shall be made to enable such a connection to be used on the port side and on the starboard side of the ship.

Part II

Ships of Class X of Less Than 55 m in Length But Not Less Than 24 m in Length

12. Application—Part II of this Code of Practice applies to Ships of Class X of less than 55m in length, but not less than 24m in length.

13. Fire Alarms—(1) In every new ship to which Part II of this Code of Practice applies which is constructed of combustible materials or where in the opinion of the Chief Surveyor a fire hazard exists due to an appreciable amount of combustible material used in the construction of the accommodation spaces, service spaces and control stations, and having regard to the size of these spaces, their arrangement and location relative to control stations and

where applicable, the flame spread characteristics of the installed furniture, there shall be installed a fixed fire alarm and fire detection system complying with the Performance Standard referred to in clause 29 of the general code.

(2) In every new ship to which Part II of this Code of Practice applies where the provision of a fixed fire alarm and fire detection system as prescribed in sub-clause (1) of this clause is not required there shall be installed in the accommodation spaces electrically operated fire-alarm bells actuated from the navigating bridge and from manually operated call points suitably located throughout the accommodation spaces. Such bells shall be supplied with electrical power from 2 separate sources, 1 of which shall be the ships' emergency source of electrical power.

(3) Every existing ship to which Part II of this Code of Practice applies not provided with a fire alarm system as provided in sub-clause (1) or (2) of this clause shall be provided with manual fire alarm bells. Such bells shall be sufficient in number, so distributed, and of such type that, in the event of a fire being detected in or adjacent to the accommodation spaces, whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout adjacent accommodation spaces. Such bells shall be permanently secured to the ship's structure and shall be clearly labelled.

14. Fire pumps—Every ship to which Part II of this Code of Practice applies shall be provided with:

(a) At least 1 power-operated fire pump, which may be driven by the main engine provided that the propeller shafting can be readily disconnected or provided that a controllable pitch propeller is fitted. Such pump shall be capable of delivering at least 1 jet of water from any fire hydrant hose and nozzle provided in the ship and shall comply with the requirements of clause 16(3) of the general code.

(b) Where in any such ship fitted with oil-fired boilers or internal combustion type propelling machinery, the pump required by paragraph (a) of this clause and its source of power and sea connections are situated within spaces containing such boilers or machinery, there shall be provided in a position outside such spaces an additional fire pump and its source of power. If that pump is operated by power it shall comply with the requirements of clause 16(8) of the general code and if it is manually operated it shall comply with the requirements of clause 16(9) of the general code.

15. Fire main, water-service pipes hydrants, hoses, and nozzles—(1) Every ship to which Part II of this Code of Practice applies shall be provided with a fire main, water-service pipes, and hydrants complying with the provisions of clause 17 of the general code and with fire hoses and nozzles complying with the provisions of clause 18 of the general code. Arrangements of fire main, water service pipes and the number and position of fire hydrants shall be such that at least one jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty.

(2) In accommodation spaces, service spaces, and machinery spaces, the requirements of subclause (1) above shall be able to be complied with when all watertight doors are closed.

(3) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with at least 1 fire hydrant which shall be located outside the space and near the entrance.

(4) In every ship to which Part II of this Code of Practice applies a hose and dual purpose nozzle shall be provided for every hydrant fitted in the ship. In addition there shall be at least 1 spare hose.

16. Portable fire extinguishers in control stations and service spaces—Every ship to which Part II of this Code of Practice applies shall be provided with at least 3 portable fire extinguishers so situated as to be readily available for use in

control stations and in any part of the accommodation and service spaces. In addition, 1 portable extinguisher and 1 fire blanket shall be provided in every galley.

17. Machinery spaces containing oil-fired boilers or oil-burning equipment—In every ship to which Part II of the Code of Practice applies there shall be provided, for the protection of any space containing any oil-fire boiler, oil-fuel settling tank, or oil-fuel unit:

(a) 1 of the following fixed fire-extinguishing installations:

(i) A pressure water-spraying system complying with the requirements of the Performance Standard referred to in clause 22 of the general code.

(ii) A fire-smothering gas installation complying with the requirements of the Performance Standard referred to in clause 24 of the general code.

(iii) A high-expansion foam fire-extinguishing installation complying with the requirements of the Performance Standard referred to in clause 25 of the general code

and, if the engine and boiler rooms are not entirely separated from each other by a bulkhead, or if fuel oil can drain from the boiler room into the engine room, the combined engine and boiler room shall for the purpose of this subclause be regarded as a single space; and

(b) In each firing space and in each space which contains any part of any oil-fuel installation, at least 2 portable fire extinguishers; and

(c) In each firing space a receptacle containing at least 150 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

18. Machinery spaces containing internal-combustion type machinery—In every ship to which Part II of this Code of Practice applies there shall be provided for the protection of every space containing internal-combustion type machinery used for main propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon-dioxide fire extinguisher of not less than 16 kg capacity:

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) Sufficient portable fire extinguishers, so located that a portable extinguisher is not more than 10m walking distance from any point in the space.

Provided that not less than 3 such extinguishers shall be required in any space containing main propulsion machinery with an aggregate power of not less than 250 kW and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

19. Machinery spaces containing steam engines—(1) In every ship to which Part II of this Code of Practice applies there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes.

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon-dioxide fire extinguisher of not less than 16 kg capacity:

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) Sufficient portable fire extinguishers, so located that a portable extinguisher is not more than 10m walking distance from any point in the space:

Provided that not less than 2 such extinguishers shall be required in any space containing main-propulsion machinery, and not less than 1 such extinguisher shall be required in any space containing only auxiliary machinery.

(2) The fire extinguishers specified in paragraph (1) of this clause shall not be required if equivalent protection is provided

in such spaces by fire appliances provided in compliance with clauses 17 and 18 of this Code.

20. Fire crew outfit—Every ship to which Part II of this Code of Practice applies shall be provided with at least 1 fire crew outfit, which shall comply with the requirements of clause 30 of the general code and with the Performance Standard referred to therein.

Part III

Ships of Class X of Less Than 24 m in Length

21. Application—Part III of the Code of Practice applied for Ships of Class X of less than 24m in length.

22. Fire alarms—(1) Every ship to which Part III of this Code of Practice applies which is a deep sea fishing boat shall be provided with 1 or more manually operated fire-alarm bells. Those bells shall be sufficient in number, so distributed, and of such type that whether at sea or in port, an alarm bell is readily accessible and is clearly audible throughout adjacent accommodation spaces.

(2) The alarm bells required to be provided in compliance with sub-clause (1) of this clause shall be additional to any electrically operated alarm-signal actuated from the navigating bridge or control station unless the electrically operated system can also be actuated from suitable manually operated call points located throughout the accommodation spaces.

(3) The alarm bells required to be provided in compliance with sub-clause (1) of this clause shall be permanently secured to the ship's structure and shall be clearly labelled.

23. Fire pumps—(1) Every ship to which Part III of this Code of Practice applies but not less than 15m in length shall be provided with at least 1 power-operated fire pump, which may be operated by the main engine and shall be capable of delivering a jet of water having a throw of at least 6m from any fire hydrant, hose, or nozzle provided in the ship.

(2) Every ship to which Part III of this Code of Practice applies but is not less than 15m in length shall be provided with at least 1 power-operated or manually-operated fire pump. That pump shall be capable of delivering a jet of water having a throw of at least 6m through any fire hydrant, hose, or nozzle provided in the ship.

(3) In any ship to which Part III of this Code of Practice applies but is less than 9m in length 2 fire buckets may be provided instead of a fire pump and in any ship of this class less than 6m in length 1 fire bucket may be provided instead of a fire pump.

(4) Where in any ship to which Part III of this Code of Practice applies the fire pump provided in compliance with the requirements of sub-clause (1), or (2) of this clause is situated in the machinery space, there shall be provided in addition 2 fire buckets.

Provided that in any such ship of less than 6m in length only 1 fire bucket need be provided.

24. Fire main, water service pipes, hydrants, hoses, and nozzles—(1) Every ship to which Part III of this Code of Practice applies shall be provided with fire mains, water-service pipes and hydrants complying with the provisions of clause 17 of the general code and with fire hoses and nozzles complying with the provision of clause 18 of the general code.

(2) In every ship to which Part III of this Code of Practice applies the arrangement of fire main and water-service pipes and the number and position of fire hydrants shall be such that:

(a) At least 1 jet of water having a throw of at least 6m can reach any part of the ship normally accessible to passengers or crew while the ship is being navigated and any store room and any part of any cargo space when empty; and

(b) Every space containing oil-fired boilers or propelling machinery of internal-combustion type shall be provided with

1 fire hydrant which shall be located outside the space and near the entrance.

(3) Every ship to which Part III of this Code of Practice applies and provided with a fire pump shall be provided with at least 1 hose and 1 dual purpose nozzle.

25. Portable fire extinguisher—(1) Every ship to which Part III of this Code of Practice applies but is not less than 15m in length shall be provided with at least 4 portable fire extinguishers, and if of less than 15m in length but not less than 6m in length with at least 3 portable fire extinguishers, of which at least 2 shall be of a type suitable for extinguishing oil fires and shall be located in or adjacent to the machinery spaces and shall have a minimum capacity in accordance with the following scale:

Foam	9 Litres
Carbon dioxide	4.5 kg
Dry powder	4.5 kg

The minimum capacities of the other fire extinguishers required under this subclause shall be in accordance with the following scale:

Water or Foam	9 Litres
Carbon Dioxide	2 kg
Dry powder	1 kg

(2) The fire extinguishers required by sub-clause (1) of this clause shall be distributed so as to be readily available in the event of a fire in any of the passenger, crew or machinery spaces, and shall be located to the satisfaction of a Surveyor.

(3) Every ship of this class less than 6m in length shall be provided with at least 2 portable fire extinguishers of the following types and minimum capacity:

Carbon dioxide	2 kg
Dry powder	2 kg

Provided that in ships of this class less than 6m in length propelled by outboard motors only 1 such extinguisher need be provided.

26. Machinery spaces containing oil-fired boilers or oil-burning equipment—(1) In every ship to which Part III of this Code of Practice applies every space containing any oil-fired boiler, oil-fuel settling tank, or oil-fuel unit shall be provided with at least:

(a) 1 foam fire extinguisher of at least 45 litres capacity or 1 carbon dioxide extinguisher of at least 16 kg capacity; and

(b) In each firing space and in each space which contains any part of any oil fuel installation, 1 portable fire extinguisher; and

(c) In each firing space, a receptacle containing at least 50 litres of sand or other dry material suitable for quenching oil fires, together with a scoop for its distribution, or, alternatively, an additional portable fire extinguisher.

(2) If an auxiliary oil-fired boiler, oil-fuel settling tank, or oil-fuel unit is fitted in a space occupied by propelling or auxiliary machinery of internal-combustion type, the fire appliances required by sub-clause (1) of this clause shall be provided in addition to any fire appliances required by the provisions of clause 27 of this Code.

27. Machinery spaces containing internal-combustion type machinery—(1) In every ship to which Part III of this Code of Practice applies the spaces containing internal-combustion type propulsion or auxiliary machinery shall be protected by the portable extinguishers required by clause 25 of this Code.

(2) Every ship to which Part III of this Code of Practice applies fitted with internal-combustion propelling machinery which uses fuel having a flash point below 60°C shall be provided with a fixed installation for the discharge of fire-smothering gas into the space containing such propelling machinery and into any space containing the storage tanks of such fuel.

(3) The fixed installation required under sub-clause (2) of this clause shall have a capacity in accordance with the following:

(a) If discharging carbon dioxide mass required

<i>Net Volume of Spaces to be Protected: Cubic Metres</i>	<i>Mass of Carbon Dioxide in Kilograms</i>
0 to 5m ³	1.0 kg CO ₂ per 0.87m ³ space
5 to 15m ³	1.0 kg CO ₂ per 0.93m ³ space
15 to 45m ³	1.0 kg CO ₂ per 1.00m ³ space
45 to 125m ³	1.0 kg CO ₂ per 1.12m ³ space
125 and over	1.0 kg CO ₂ per 1.25m ³ space

(b) If discharging a fire-smothering gas other than carbon dioxide the installation shall have a capacity approved by the Chief Surveyor.

(4) The fixed installation required under sub-clause (3) of this clause may be manually or automatically operated, but any automatically operated installation shall be provided with an alarm giving audible warning to persons within the protected spaces.

(5) Where in the opinion of the Chief Surveyor the propelling machinery and fuel-storage tanks of any ship to which this clause applies are so open to the atmosphere as to make the fitting of a fixed fire-smothering gas installation ineffective, he may allow the requirements of sub-clause (2) of this clause to be dispensed with.

(6) Where a ship to which Part III of this Code of Practice applies fitted with propelling machinery which uses fuel having a flash point of less than 60°C is fitted with a fixed fire-smothering gas installation, the number of fire extinguishers of a type suitable for use on oil fires required under the provisions of clause 25 of this Code may be reduced by 1. Provided the number of fire extinguishers onboard shall not be less than 1.

(7) Every ship to which Part III of this Code of Practice applies fitted with propelling machinery which uses fuel having a flash point of less than 60°C shall be provided with a system for the automatic detection of fuel-gas vapour in the spaces containing the propelling machinery and the fuel storage tanks. That automatic gas detector shall be capable of giving a visible and audible warning of the presence of fuel-gas vapour.

28. Machinery spaces containing steam engines—(1) In every ship to which Part III of this Code of Practice applies there shall be provided for the protection of every space containing steam turbines or enclosed pressure-lubricated steam engines used for main-propulsion or auxiliary purposes:

(a) At least 1 foam fire extinguisher of not less than 45 litres capacity or 1 carbon dioxide fire extinguisher of not less than 16 kg capacity:

Provided that such an extinguisher shall not be required in any machinery space containing only auxiliary machinery; and

(b) At least 2 portable fire extinguishers in every space containing main-propulsion machinery and at least 1 portable extinguisher in every space containing only auxiliary machinery.

(2) The fire extinguishers specified in sub-clause (1) of this clause shall not be required if equivalent protection is provided in such spaces by fire extinguishers provided in accordance with the provisions of clause 25 of this Code.

29. Fire crew outfits—Every ship to which Part III of this Code of Practice applies but over 9m in length shall carry at least 1 fire crew axe and 1 safety lamp each complying with the requirements of clause 30 of the general code and with the Performance Standard referred to therein.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989

Pursuant to section 235 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Fire Appliances) Regulations 1989.

Schedule

Code of Practice for General Requirements for Fire Appliances

1. Interpretation—In this Schedule, unless the context otherwise requires,—

“The Act” means the Shipping and Seamen Act 1952.

“Accommodation spaces” means passenger spaces, public spaces, corridors, lavatories, cabins, offices, crew spaces, shops isolated pantries and lockers and similar spaces:

“Approved” means approved in writing by the Director:

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Classes I, II, III, IV, V, VI, VII, VIIA, VIII, IX and X” are as stated in the Shipping (Fire Appliances) Regulations 1989.

“Control station” means any space in which radio, main navigating equipment, or the emergency source of electrical power is centralised:

“Crew space” has the same meaning as the expression “crew accommodation”, as defined in The Shipping and Seaman Act 1952.

“General Code” means The Fire Appliances (Code of Practice for General Requirements for Fire Appliances) Notice 1989.

“Main vertical zone” means those sections into which the hull, superstructure, and deckhouses are divided by “A” class divisions the mean length of which on any one deck does not, except in special circumstances, exceed 40m.

“Machinery spaces of category ‘A’” means those spaces and trunks to such spaces which contain—

(a) internal combustion machinery used for main propulsion; or

(b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or

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

“Machinery spaces” means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces:

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached,

(a) in the case of a ship of Classes I, VII and VIIA on the 1st day of July 1989; and

(b) in the case of a ship of Classes II, III, IV, V, VI, VIII, IX and X on the date of commencement of this Notice;

and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with ship comprises at least 50 tonnes or 1 per cent of the estimated mass of the structural material of the completed ship, whichever is the less. A cargo ship, whenever

built, which is converted to a passenger ship shall be treated as a passenger ship constructed on the date on which a conversion commences.

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal combustion engine; and includes any oil-pressure pumps, filters, and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Passenger Space” means space provided for the use of passengers.

“Portable fire extinguisher” means (except where otherwise specified in this code) a fire extinguisher in which the capacity for the fire fighting medium if a fluid is not more than 13.5 litres and not less than 9 litres. Extinguishers using other fire fighting medium shall be at least as portable as the 13.5 litres fluid extinguisher and shall have a fire extinguishing capability at least equivalent to that of a 9 litres fluid extinguisher:

“Public spaces” means those portions of the accommodation which are used for halls, dining rooms, lounges, and similar enclosed spaces:

“Services spaces: means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces and trunkways leading to such spaces:

“Settling tank” means an oil fuel storage tank having a heating surface of not less than 0.186m² tonne of oil capacity:

“Special-category space” means any enclosed spaces above or below the bulkhead deck for the carriage of motor vehicles with fuel in their tanks for their own propulsion, being a space into and from which such vehicles can be driven and to which passengers have access.

“Water fog applicator” means an “L” shaped pipe the long limb being about 2m in length capable of being fitted to a fire hose and the short limb being about 250mm in length fitted with a fixed water fog nozzle or capable of being fitted with a water spray nozzle:

Other expression defined in the Act have the meanings so defined.

2. Performance Standards—(1) The Minister may prescribe from time to time, by notice in *Gazette*, specifications referred to in the Shipping (Fire Appliances) Regulations 1989 as Performance Standards in respect of fire appliances required to be carried pursuant to fire appliances codes of practice.

(2) For the purpose of this clause, fire appliances shall include:

- (a) Portable and non portable fire extinguishers,
- (b) International shore connections,
- (c) Breathing apparatus for fire crew outfits,
- (d) Inert gas systems,
- (e) Fixed deck foam systems,
- (f) Fixed pressure water spraying systems for machinery spaces and for special category spaces,
- (g) Fixed fire smothering gas installations,
- (h) Fixed high and low expansion foam fire extinguishing systems,
- (i) Fixed fire detection and fire alarm systems and other devices or appurtenances associated therewith and all equipment and fittings to be carried or attached thereon or hereto, and,
- (j) Miscellaneous fire appliances.

(3) Such performance standards shall be in respect of the design, installation, materials and method of construction,

performance, operational capabilities, initial and periodic testing and inspection, capacity, marking, stowage and handling, or any other matter in respect of such fire appliances which the Minister considers necessary or relevant.

3. Additional Requirements—This code of practice, adds general provisions and additional requirements for fire fighting appliances relevant to the codes of practice issued under the Shipping (Fire Appliances) Regulations 1989.

4. Requirements for passenger ships having special category spaces—(1) The requirements of this clause apply to every passenger ship having special category spaces.

(2) An efficient patrol system shall be maintained in special category spaces. In any such space in which the patrol is not maintained by a continuous fire watch at all times during the voyage there shall be provided a fixed fire detection and alarm system complying with the requirements of clause 29 of this code.

(3) Manually operated call points shall be provided as necessary throughout the special category spaces and 1 shall be placed close to each exit from such spaces.

(4) Each special category space shall be fitted with an approved fixed pressure water-spraying system complying with the provisions of clause 22 of this code which shall protect all parts of any deck and vehicle platform in such spaces:

Provided the Chief Surveyor may permit the use of any other fixed fire-extinguisher system that has been shown by full scale test in conditions simulating a flowing petrol fire in a special category space to be not less effective in controlling fires likely to occur in such a space.

(5) Each special category space shall be provided with:

- (a) At least 3 water fog applicators; and
- (b) 1 portable foam applicator unit complying with the provisions of clause 27 of this code provided that at least 2 such units are available in the ship for use in such spaces; and
- (c) The number of portable fire extinguishers as the Chief Surveyor may deem sufficient, provided there is at least 1 portable extinguisher located at each access to such spaces.

5. Requirements for ships having cargo spaces, other than special category spaces, intended for the carriage as cargo of motor vehicles with fuel in their tanks for their own propulsion—(1) The requirements of this clause apply to every ship having cargo spaces, other than special category spaces, intended for the carriage as cargo of motor vehicles with fuel in their tanks for their own propulsion.

(2) There shall be provided in such cargo spaces a fixed fire detection and fire alarm system complying with the provisions of clause 29 of this code.

(3) There shall be fitted in such spaces a fixed fire-smothering gas installation complying with the provisions of clause 24 of this code, except that, if a carbon dioxide system is fitted, the quantity of gas available shall be at least sufficient to give a minimum volume of free gas equal of 45 percent of the gross volume of the largest cargo space which is capable of being sealed, and the arrangements shall be as to ensure that at least two thirds of the gas required for the relevant space shall be introduced during 10 minutes. Any other fixed gas fire-extinguishing system may be fitted provided it gives equivalent protection. Furthermore, any cargo space designated only for vehicles which are not carrying any cargo may be fitted with fixed fire-extinguishing systems which shall comply with the provisions of clause 24 of this code.

(4) As an alternative to the fixed fire-extinguishing system required by sub paragraph (3) of this clause a fixed water spraying system complying with the provisions of clause 23 of this code may be fitted in such spaces provided the requirements for freeing the ship of water as provided in Codes of Practice issued under The Shipping (Construction) Regulations 1989 as appropriate are complied with.

(5) Every such cargo space shall be provided with such number of portable fire extinguishers as the Chief Surveyor may deem sufficient, provided that there is at least 1 portable extinguisher located at each access to such spaces.

6. Requirements for ships, other than passenger ships, having ro-ro cargo spaces—(1) The requirements of this clause apply to every ship other than a passenger ship, having ro-ro cargo spaces.

(2) There shall be provided in ro-ro cargo spaces a fixed fire detection and fire alarm system complying with the provisions of clause 29 of this code.

(3) There shall be provided in ro-ro cargo spaces capable of being sealed a fixed fire smothering gas installation complying with clause 24 of this code provided that:

(a) If a carbon dioxide system is fitted, the quantity of gas available shall be at least sufficient to give a minimum volume of free gas equal to 45 percent of the gross volume of the largest cargo space which is capable of being sealed, and the arrangements shall be such as to ensure that at least two thirds of the gas required for the relevant space shall be introduced during 10 minutes;

(b) Any other fixed gas fire-extinguishing system or fixed high expansion foam fire-extinguishing system may be fitted provided that Chief Surveyor is satisfied that an equivalent protection is achieved.

(4) As an alternative to the fixed fire-extinguishing system required by sub paragraph (2) of this clause a fixed pressure water spraying system complying with the provisions clause 23 of this code may be fitted in such spaces provided the requirements for freeing the ship of water as provided Codes of Practice issued under The Shipping (Construction) Regulations 1989 as appropriate are complied with.

(5) Ro-ro cargo spaces not capable of being sealed shall be fitted with a fixed pressure water spraying system complying with the provisions of clause 23 of this code provided the requirements for freeing the ship of water as provided in the Codes of Practice issued under The Shipping (Construction) Regulations 1989 as appropriate are complied with.

(6) There shall be provided for use in any ro-ro cargo space such number of portable fire extinguishers as the Chief Surveyor may deem sufficient. At least 1 portable extinguisher shall be located at each access to such cargo space.

(7) Every ro-ro space intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion shall be provided with:

(a) At least 3 water fog applicators;

(b) 1 portable foam applicator unit complying with the provisions of clause 27 of this code provided that at least 2 such units are available in the ship for use in such ro-ro cargo spaces.

7. Special requirements for ships carrying dangerous goods—(1) Subject to paragraph (2) of this clause, ships which are intended, or which contain cargo spaces which are intended, for the carriage of dangerous goods shall comply with the protective requirements prescribed in paragraphs (4) to (11) of this clause and the Tables at the end of this clause.

(2) This clause shall not apply to ships or spaces intended for the carriage of dangerous goods in limited quantities as referred to in section 18 of the general introduction to the International Maritime Dangerous Goods Code.

(3) Nothing in this clause shall be taken to require duplication of anything already provided in a ship in compliance with The Code of Practice issued under the Shipping (Fire Appliances) Regulations 1989.

(4) The following requirements shall govern the application of the Tables.

(5) For the purpose of determining the application of the requirements of paragraphs (a)—(i) of sub-clause (6) of this

clause, ships and cargo spaces are divided into categories A–E as set out below.

A ships and cargo spaces not specifically designed for the carriage of freight containers but intended for the carriage of dangerous goods in package form including goods in freight containers and portable tanks;

B purpose built container ships and cargo spaces intended for the carriage of dangerous goods in freight containers and portable tanks;

C spaces intended for the carriage of dangerous goods which are:

(i) closed ro-ro cargo spaces,

(ii) open ro-ro cargo spaces, or

(iii) ro-ro cargo spaces on the weather deck.

D ships and cargo spaces intended for the carriage of solid dangerous goods in bulk;

E ships and cargo spaces intended for the carriage of dangerous goods other than liquids and gases in bulk in shipborne barges.

Such categories are listed in the top horizontal row of Table 1.

(6) The applicable requirements for the purposes of this clause are set out in the following paragraphs:

(a) arrangements shall be made to ensure immediate availability of a supply of water from the fire main at the required pressure either by a permanent pressurisation of the firemain or by suitably placed remote starting arrangements for the fire pumps;

(b) the quantity of water delivered shall be capable of supplying four nozzles of a size and at pressures as specified in clause 17 and clause 18 of this Code capable of being trained on any part of the cargo space when empty. This amount of water may be applied by equivalent means to the satisfaction of the Chief Surveyor;

(c) means of effectively cooling the designated under deck cargo space by copious quantities of water, either by a fixed pressure water spraying system complying with clause 23 of this code or flooding the cargo space with water, shall be provided. Hoses may be used for this purpose in small cargo spaces and in small areas of larger cargo spaces at the discretion of the Chief Surveyor. The drainage and pumping arrangements shall be such as to prevent the build up of free surfaces. If this is not possible, the adverse effect upon stability of the added weight and free surface of water shall be taken into account as necessary in calculating stability;

(d) provision to flood a designated under deck cargo space with suitable specified media may be substituted for the requirements in sub-clause (c) of this clause;

(e) all enclosed cargo spaces including closed ro-ro cargo spaces and special category spaces shall be fitted with a fixed fire detection and fire alarm system complying with the requirements of clause 29 of this code;

(f) four sets of full protective clothing resistant to chemical attack shall be provided in addition to the fire crew outfits required in fire appliances (Codes of Practice). Protective clothing shall cover all skin so that no part of the body is unprotected;

(g) at least two sets of self-contained breathing apparatus complying with the performance standard for breathing apparatus shall be provided in addition to the breathing apparatus otherwise required in the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989;

(h) at least three portable fire extinguishers of the dry powder type or equivalent complying with clause 20 of this code shall be provided for each cargo space. These extinguishers shall be in addition to any portable fire extinguishers required elsewhere in the Codes of Practice

issued under The Shipping (Fire Appliances) Regulations 1989;

(i) each special category space, each open ro-ro cargo space having a deck over and each space deemed to be a closed ro-ro cargo space not capable of being sealed shall be fitted with a fixed pressure water spraying system complying with clause 23 of this code for the protection of all parts of any deck and vehicle platform in such space, except that the Chief Surveyor may permit the use of any other fixed fire extinguishing system that has been shown by full scale test to be no less effective.

The paragraphs of this sub-clause are listed in the left hand vertical columns of Tables 1, 2 and 3.

(7) The classes of dangerous goods referred to in this clause are those specified in the International Maritime Dangerous Goods Code. Such classes are listed in the top horizontal rows of Tables 2 and 3.

(8) Ships and cargo spaces in categories A B C or E shall comply with a particular paragraph of sub-clause (6) of this clause if

(a) an "X" appears in Table 2 where the vertical column for that category crosses the horizontal row for that sub-paragraph and

(b) the dangerous goods (not being solid dangerous goods carried in bulk) which the ship or space as the case may be intended to carry are of a class included in Table 3 and an "X" appears in that table where the vertical column for that class crosses the horizontal row for that paragraph.

(9) Ships and cargo spaces of category D shall comply with the requirements of a particular paragraph of sub-clause (6) of this clause if the dangerous goods (being solid dangerous goods in bulk) are of a class included in Table 2 and an "X" appears where the vertical column for that class of goods crosses the horizontal row for that paragraph.

(10) Any requirement applicable in accordance with this clause shall be applied subject to any exception or modification set out in the footnotes to the relevant Table or Tables which is applicable to that particular case.

(11) Where in a ship or cargo space of category D dangerous goods of class 4.3 are carried, the Chief Surveyor may, having regard to the hazards of the particular dangerous goods, impose such additional requirements as he may think necessary.

Table 1—Application of the Requirements to Different Modes of Carriage of Dangerous Goods in Ships and Cargo Spaces

Clause 7 (6)	Clause 7 (5)						
	A	B	C			D	E
	Not Specifically designed	Container cargo spaces	Closed ro-ro cargo spaces	Open ro-ro cargo spaces	Weather decks	Intended for Solid dangerous	Shipborne barges goods in bulk
(a) Immediate availability of water supplies	X	X	X	X	X		X
(b) Quantity of water	X	X	X	X	X	For application of requirements of this clause to different classes of dangerous goods see Table 2	—
(c) Water cooling	X	X	X	X	—		X
(d) Cargo space flooding	X	X	X	X	—		X
(e) Fire detection	X	X	X	—	—		X ^b
(f) Protection clothing	X	X	X	X	X		—
(g) Breathing apparatus	X	X	X	X	X		—
(h) Fire extinguishers	X	—	—	X	X		—
(i) Water spray	—	—	X ^a	X	—		—

Notes (Table 1)

^a Applied only to closed ro-ro cargo spaces, not capable of being sealed.

^b In the special case where the barges are capable of containing flammable vapours or alternatively if they are capable of discharging flammable vapours to a safe space outside the barge carrier compartment by means of ventilation ducts connected to the barges, these requirements may be reduced or waived to the satisfaction of the Chief Surveyor.

Table 2—Application of the Requirements to Different Classes of Dangerous Goods for Ships and Cargo Spaces Carrying Solid Dangerous Goods in Bulk

Clause 7 (6)	Class of Dangerous Goods						
	4.1	4.2	4.3 ^a	5.1	6.1	8	9
(a) Immediate availability of water supplies	X	X	—	X	X ^c	X ^c	X
(b) Quantity of water ^c	X	X	—	X	—	—	X
(f) and (g) Personnel protection	X	X	X	X	X	X	X

Notes (Table 2)

^c This requirement is applicable only when the characteristics of the substance call for large quantities of water for fire fighting.

^d For possible additional requirements see paragraph (11) of this clause.

^e Further requirements which may be applicable in a particular case are contained in the International Maritime Dangerous Goods Code (resolution A81(IV) as amended) or the Code of Safe Practice for Solid Bulk Cargoes (resolution A434(XI) as amended) as appropriate; as published by the International Maritime Organisation.

Table 3—Application of the Requirements to Different Classes of Dangerous Goods Except Solid Dangerous Goods in Bulk

Clause 7 (6)	Class of Dangerous Goods						
	1	2	3	4	5.1	5.2	6.1
(a) Immediate availability of water supplies	X	X	X	X ^b	X	X ^b	X
(b) Quantity of water	X	X	X	X ^b	X	X ^b	—
(c) Water cooling	X ^c	—	—	—	—	—	—
(d) Cargo space flooding	X ^c	—	—	—	—	—	—
(e) Fire detection	X	X	X	X	X	—	X
(f) & (g) Personnel protection	—	X	X	X	X	X ^b	X
(h) Fire extinguishers	—	—	X	X	X	X ^b	X ^b
(i) Water Spray	X	X	X ^a	X ^b	X	—	X ^a

Notes (Table 3)

^a Except dangerous goods of class 1 in division 1.4 compatibility group S.

^b Applicable only to liquids having a flashpoint below 23°C (closed cup test).

^c Further requirements which may be applicable are contained in the International Maritime Dangerous Goods Code (resolution A81(IV) as amended) or the Code of Safe Practice for Solid Bulk Cargoes (resolution A434(XI) as amended) as appropriate.

8. Cargo tank protection for tankers—(1) Every tanker to which The Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply of 20,000 tonnes deadweight and upwards the protection of the cargo tanks deck area and cargo tanks shall be achieved by a fixed deck foam system and a fixed inert gas system in accordance with the requirements of clause 9 and clause 10 of this Code except that, in lieu of the above installations, the Chief Surveyor after having given consideration to the ship's arrangement and equipment, may accept other combinations of fixed installations if they afford protection equivalent to the above.

(2) To be considered equivalent, the system proposed in lieu of the deck foam system shall:

(a) be capable of extinguishing spill fires and also preclude ignition of spilled oil not yet ignited; and

(b) be capable of combating fires in ruptured tanks.

(3) To be considered equivalent, the system proposed in lieu of the fixed inert gas system shall:

(a) be capable of preventing dangerous accumulations of explosive mixtures in intact cargo tanks during normal service throughout the ballast voyage and necessary in-tank operations; and

(b) be so designed as to minimise the risk of ignition from the generation of static electricity by the system itself.

(4) All tankers operating with a cargo tank cleaning procedure using crude oil washing shall be fitted with a inert gas system complying with the requirements of clause 10 of this Code and with fixed tank washing machines.

(5) All tankers fitted with a fixed inert gas system shall be provided with a closed ullage system.

(6) Tankers of less than 20,000 tonnes deadweight shall be provided with a fixed deck foam system complying with the requirements of clause 9 of this code.

9. Fixed deck foam systems for tankers—(1) Every tanker to which this clause applies shall be provided with arrangements capable of providing and delivering foam to the entire cargo tanks deck area as well as into any cargo tank the deck of which has been ruptured.

(2) The deck foam system shall be capable of simple and rapid operation. The main control station for the system shall be suitably located outside the cargo area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.

(3) The design, construction, installation and operational capabilities of the fixed deck foam system shall comply with the requirements of the Performance Standards for such a system referred to in clause 2 of this code.

10. Inert gas systems for tankers—(1) The inert gas system referred to in clause 8 (4) of this Code shall be so designed and operated as to render and maintain the atmosphere of the cargo tanks non-flammable at all times, except when such tanks are required to be gas free. In the event that the inert gas system is unable to meet the operational requirement set out above and it has been assessed that it is impractical to effect a

repair, then cargo discharge, deballasting and necessary tank cleaning shall only be resumed when the "emergency conditions" laid down in the guidelines on inert gas systems as adopted by the I.M.O. Maritime Safety Committee at its forty eighth session in June 1983 are complied with.

(2) The design, construction, installation and operational capabilities of the inert gas systems shall comply with the requirements of the Performance Standard for such a system referred to in clause 2 of this code.

11. Requirements for cargo pump rooms in tankers—(1) Each cargo pump room shall be provided with 1 of the following fixed fire-extinguishing systems operated from a readily accessible position outside the pump room.

(a) A carbon dioxide system complying with clause 24 of this Code and with the following:

(i) the alarms referred to in clause 29 of this Code shall be safe for use in a flammable cargo vapour/air mixture;

(ii) a notice shall be exhibited

at the controls stating that due to the electrostatic ignition hazard, the system is to be used only for fire extinguishing and or for inerting purposes; or

(b) A high expansion foam system complying with the provisions of clause 25 of this Code provided that the foam concentrate supply is suitable for extinguishing fires involving the cargoes carried; or

(c) A fixed pressure water-spraying system complying with the provisions of clause 23 of this Code.

(2) Where the extinguishing medium used in the cargo pump room system is also used in systems serving other spaces, the quantity of medium provided or its delivery rate need not be more than the maximum required for the largest compartment.

12. Requirements for combination carriers—Every ship to which fire appliances the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply which is a tanker and a combination carrier shall comply with the provisions of Codes of Practice as they apply. An approved fixed gas warning system capable of monitoring flammable vapours shall be provided in cargo pump-rooms and pipe ducts and cofferdams adjacent to slop tanks. Suitable arrangements shall be made to facilitate measurement of flammable vapours in all other spaces within the cargo area. Such measurements shall be made possible from open deck or easily accessible positions.

13. Requirements for gas carriers—Every ship to which fire appliances the Codes of Practice issue under The Shipping (Fire Appliances) Regulations 1989 apply which is a gas carrier shall comply with the provisions of the Fire Appliances (Codes of Practice) Notice 1989 as they apply a ship of class VII, VIII or IX as appropriate and in addition shall be provided fire protection in compliance with the requirements of the IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gas in Bulk as from time to time amended or substituted.

14. Requirements for chemical carriers—Every ship to which the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply which is a chemical carrier shall comply with the provisions of the Fire Appliances (Codes of Practice) Notice 1989 as they apply to a ship of Class VII, VIII or IX as appropriate and in addition shall be provided with fire appliances and fire protection in compliance with the requirements of the IMO International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk as from time to time amended or substituted.

15. Requirements for ships provided with helicopter landing with or without fuelling facilities—(1) In every ship provided with a helicopter deck there shall be provided and stored adjacent to the means of access to that deck:

(a) Dry powder extinguishers of total capacity not less than 46 kg.

(b) A suitable foam applicator system consisting of monitors or foam making branch pipes capable of delivery foam solution at a rate of not less than 6 litres per minute per square metre of the area contained within a circle of diameter D m for not less than 5 minutes. For the purpose of this clause, D is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter with a single main rotor and across both rotors for a tandem rotor helicopter.

(c) Carbon dioxide extinguishers of total capacity of not less than 16 kg, which shall be so equipped as to enable it to be applied to the engine area of any helicopter using the deck.

(2) The arrangement of water service pipes, hydrants, hoses and nozzles shall be such that at least 2 jets of water can reach any part of the helicopter deck, and where helicopter refueling facilities are provided, any part of the fuel storage tanks and associated pumps and piping.

(3) All such nozzles provided in accordance with sub-clause (2) shall be of dual purpose type complying with the requirements of the Performance Standard.

(4) In every ship provided with helicopter refueling facilities at least 2 portable extinguishers suitable for fighting oil fires shall be provided adjacent to the fuel storage tanks and associated pumps and piping in addition to any portable extinguishers required elsewhere in The Fire Appliances (Codes of Practice) Notice 1989.

16. Fire pumps—(1) In every passenger ship to which fire appliances (Codes of Practice) apply which is required by those Codes of Practice to be provided with fire pumps operated by power, such fire pumps (other than any emergency fire pump) shall together be capable of delivering for fire fighting purposes a quantity of water, under the conditions and at the pressure specified in clause 17 of this Code of not less than 2/3 of the quantity required to be dealt with by the bilge pumps provided in the ship in compliance with the Codes of Practice issued under The Shipping (Construction) Regulations 1989.

(2) In every ship, other than a passenger ship or a fishing vessel, to which fire appliances (Codes of Practice) apply which is required by those Codes of Practice to be provided with fire pumps operation by power, such fire pumps (other than any emergency fire pump) shall be capable of delivery for fire fighting purposes a quantity of water, under the conditions and at the pressure specified in clause 17 of this Code which shall not be less than 4/3 of the quantity required in compliance with the Codes of Practice issued under The Shipping (Construction) Regulations 1989 to be dealt with by each of the independent bilge pumps in a passenger ship of the same dimensions when employed in bilge pumping, provided that in no such ship need the total required capacity of the fire pumps exceed 180m³/hour.

(3) In every fishing vessel to which the Codes of Practice issued under the Shipping (Fire Appliances) Regulations 1989 apply which is required by those Codes of Practice to be

provided with fire pumps operated by power, such fire pumps (other than any emergency fire pump) shall together be capable of delivery for fire fighting purposes a quantity of water (Q) not less than that obtained from the following formula:

$$Q = (0.15 L(B + D) + 2.25)^2 \text{ m}^3/\text{hour}$$

where L, B and D are the register dimensions of the vessel in metres. However, the total required capacity of the fire pumps need not exceed 180m³/hour.

(4) Each of the fire pumps (other than any emergency pump) required by subclause (1) or (2) of this clause shall have a capacity not less than 80 percent of the total required capacity divided by the minimum number of required fire pumps but in any case not less than 25m³/hour. Provided that where more pumps than the minimum required pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Chief Surveyor.

(5) Each of the fire pumps (other than any emergency pump) required by subclause (3) of this clause shall have a capacity not less than 40 percent of the total required capacity provided that when more than 2 pumps are installed the capacity of such additional pumps shall be to the satisfaction of the Chief Surveyor.

(6) Every fire pump required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 to be operated by power shall, except as expressly provided otherwise in those Codes of Practice, be operated by a means other than the ship's main engines. Fire pumps provided in compliance with Codes of Practice may be sanitary, ballast, bilge, or general services pumps provided:

(a) They are not normally used for pumping oil; and

(b) If they are subject to occasional duty for the transfer or pumping of oil, suitable change-over arrangements are fitted and operating instructions are conspicuously displayed at the change-over position.

(7) Every emergency fire pump required by the Codes of Practice issued under the Shipping (Fire Appliances) Regulations 1989 to be provided in ships of Class I with a gross tonnage of less than 1000 tonnes and in ships of Class VII and VIIA with a gross tonnage of more than 2000 tonnes, shall comply with the following:

(a) The pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 hydrants, hoses or nozzles provided in the ship while maintaining a pressure of not less than 200 kPa at any other hydrant in the ship.

(b) The capacity of the pump shall be not less than 40 percent of the total capacity of the fire pumps required by subclause (1) or (2) of this clause as appropriate and in any case not less than 25m³/hour.

(c) Any diesel driven power source for the pump shall be capable of being readily started in its cold condition down to a temperature of 0°C by hand (manual) cranking. If this is impracticable, or if lower temperatures are likely to be encountered, consideration is to be given to the provision and maintenance of heating arrangements, acceptable to the Chief Surveyor so that ready starting will be assured. If hand (manual) starting is impracticable the Chief Surveyor may permit other means of starting. These means shall be such as to enable the diesel driven power source to be started at least 6 times within a period of 30 minutes, and at least twice within the first 10 minutes.

(d) Any service fuel tank shall contain sufficient fuel to enable the pump to run on full load at least 3 hours and sufficient reserves of fuel shall be available outside the main machinery space to enable the pump to be run on full load for an additional 15 hours.

(e) The total suction head of the pump shall not exceed 4.5m under all conditions of list and trim likely to be

encountered in service and the suction piping shall be designed to minimise suction losses.

(f) The boundaries of the space containing the fire pump shall be insulated to a standard of structural fire protection equivalent to that required for a control station as prescribed in the Codes of Practice issued under the Shipping (Construction) Regulations 1989.

(g) No direct access shall be permitted between the machinery space and the space containing the emergency fire pump and its source of power. When this is impracticable the Chief Surveyor may accept an arrangement where the access is by means of an airlock, each of the two doors being self-closing, or through a watertight door capable of being operated from a space remote from the machinery space and the space containing the emergency fire pump and unlikely to be cut off in the event of fire in those spaces. In such cases a second means of access to the space containing the emergency fire pump and its source of power shall be provided. The pump shall be located aft of the ship's collision bulkhead.

(h) Ventilation arrangements to the space containing the independent source of power for the emergency fire pump shall be such as to preclude, as far as practicable, the possibility of smoke from a machinery space fire entering or being drawn into that space.

(8) Every power driven emergency fire pump required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 to be provided in ships other than these specified in subclause (7) of this clause shall comply with the following:

(a) The pump shall be an independently driven self contained pump either with its own diesel engine prime mover and fuel supply fitted in an accessible position outside the compartment which contains the main fire pumps, or be driven by a self contained generator of sufficient capacity and which is in a safe place outside the engine room. The pump shall be capable of operating for a period of at least 3 hours.

(b) The pump, sea suction valves and other necessary valves shall be operable from outside compartments containing main fire pumps in a position not likely to be cut off by a fire in those compartments and shall be located aft of the ship's collision bulkhead.

(c) The pump shall be capable of delivering at least 1 jet of water simultaneously from each of any 2 hydrants, hoses or nozzles provided in the ship while maintaining a pressure of not less than 200 kPa at any other hydrant in the ship:

Provided that in ships of Class II of less than 24m in length, Classes III, and VI of less than 45m in length, Classes IV, V and XI, and Class X of less than 75m in length the pump shall be capable of delivering at least 1 jet of water from any one hydrant in the ship while maintaining a pressure of not less than 200 kPa at any other hydrant in the ship.

(9) Every manually operated emergency fire pump required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 to be provided in a ship shall comply with the following:

(a) The pump, sea suction valves and other necessary valves shall be operable from outside compartments containing propulsion machinery in a position not likely to be cut off by a fire in those compartments and shall be located aft of the ship's collision bulkhead.

(b) The pump shall be capable of delivering at least 1 jet of water having a throw of at least 6m from any fire hydrant hose and nozzle provided in the ship.

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

(11) Every centrifugal pump which is connected to the fire main shall be fitted with a non-return valve.

17. Fire main, water-service pipes, and hydrants—(1) In every ship which is required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 to be provided with power operated fire pumps, the diameter of the fire main and of the water-service pipes connecting the hydrants thereto shall be sufficient for the effective distribution of the maximum discharge required by those Codes of Practice from:

(a) Where only 1 pump is required by a Code of Practice, that pump; or

(b) Where 2 such pumps are so required, both pumps operating simultaneously; or

(c) Where more than 2 such pumps are so required, the largest 2 of those pumps operating simultaneously:

provided that in any ship other than a passenger ship, the diameter of the fire main and of the water-service pipes need be sufficient only for the discharge of 140m³ per hour.

(2) When the fire pumps required by those Codes of Practice are discharging the quantity of water required by subclauses (1), (2) or (3) of this clause as appropriate through adjacent fire hydrants in any part of the ship from nozzles of sizes specified in clause 18 of this code the following minimum pressure shall be capable of being maintained at any hydrant.

<i>Any Passenger Ship</i>	
With a gross tonnage of 4000 and upwards	310 kPa
With a gross tonnage of 1000 and upwards but under 4000	270 kPa
With a gross tonnage below 1000	200 kPa
<i>Any Ship Other Than a Passenger Ship or Fishing Vessel</i>	
With a gross tonnage of 6000 and upwards	270 kPa
With a gross tonnage of 1000 and upwards but under 6000	250 kPa

<i>Fishing Vessels</i>	
Any fishing vessel of 55m in length or over	250 kPa
Any fishing vessel of less than 55m in length	200 kPa

(3) The maximum pressure at any hydrant shall not exceed that at which the effective control of a fire hose can be demonstrated.

(4) Where any ship is required by to provide 2 jets of water under the conditions required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 hydrants sufficient in number shall be so positioned as to enable at least 2 jets of water not emanating from the same hydrant, one of which shall be from a single length of hose to reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated, and to any store room and any part of any cargo space when empty. Provided that in a special category space 2 jets of water shall reach any part of such space each from a single length of hose.

(5) Where any ship is required to provide 1 jet of water under the conditions required by the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 hydrants sufficient in number shall be so positioned as to enable 1 jet of water from a single length of hose to reach any part of the ship normally accessible to the passengers or crew while the ship is being navigated, and to any store room and any part of any cargo space when empty.

(6) The fire main shall have no connections other than those necessary for fire fighting and washing down including anchor washing.

(7) Materials readily rendered ineffective by heat shall not be used for fire mains unless adequately protected. The pipes and fire hydrants shall be so placed that the fire hoses may be easily coupled to them and operated without kinking.

(8) In ships which may carry deck cargo, the fire hydrants shall be so placed that they are always readily accessible, and the

pipes shall be arranged so far as practicable to avoid risk of damage by such cargo.

(9) Valves of the screw-lift type or cocks shall be fitted in such positions on the pipes that any of the fire hoses may be removed while the fire pumps are at work.

(10) The water pipes shall not be made of cast iron, and if made of iron or steel shall be galvanised in accordance with the Performance Standard.

(11) Where wash deck-lines are not self-draining, suitable drain cocks shall be fitted to avoid damage by frost.

(12) In tankers isolation valves shall be fitted in the fire main at poop front in a protected position and on the tank deck at intervals of not more than 40m to preserve the integrity of the fire main system in case of fire or explosion.

(13) In ships of Class I, II and III, ships of Class VII, VIIA and VIII with a gross tonnage of 500 and over, and ships of Class X of 55m in length, and over isolating valves to separate the section of the fire main within the machinery space containing the main fire pump or pumps from the rest of the fire main shall be fitted in an easily accessible and tenable position outside the machinery spaces. The fire main shall be so arranged that when the isolating valves are shut all the hydrants on the ship, except those in the machinery space referred to above, can be supplied with water by a fire pump not located in this machinery space through pipes which do not enter this space. Provided that the Chief Surveyor may permit short lengths of the emergency fire pump suction and discharge piping to penetrate the machinery space if it is impracticable to route it externally provided that the integrity of the fire main is maintained by the enclosure of the piping in a substantial steel casing.

18. Fire hoses and nozzles—(1) Fire hoses provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall not exceed 18m in length, except that in ships having a moulded breadth of 27m or more fire hoses for exterior locations and for cargo spaces shall not exceed 27m in length and comply with the Performance Standards referred to in clause 2 of this code.

New Zealand ships shall be provided with hose couplings and other fittings complying with NZSS 4505:1977.

(2) Every fire hose provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulation 1989 together with the tools and fittings necessary for its use, shall be kept in a conspicuous position near the hydrants or connections with which it is intended to be used. In interior locations on ships of Class I, II or III fire hoses shall be connected to the hydrants at all times. There shall be complete interchangeability of fire-hose couplings and nozzles.

(3) Except in ships of Class IV, V, VI, IX and X fire hoses provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall not be used for any purpose other than extinguishing fire or testing with fire appliances.

(4) Every ship which is provided with power-operated fire pumps shall be provided with nozzles of 12mm, 15mm or 19mm in diameter or as near thereto as possible, and every ship which is provided with a manually-operated fire pump shall be provided with nozzles of 9mm diameter or as near thereto as possible. Larger diameter nozzles may be permitted if the requirements of Codes of Practice relating to the provision of water for fire-fighting purposes are otherwise complied with.

(5) For machinery spaces and exterior locations the diameter of the nozzles shall be such as to obtain the maximum possible discharge from the minimum number of jets of water, and at the pressure prescribed by Codes of Practice from the smallest fire pump permitted by clause 16 of this Code; but the diameter of any nozzles shall not be required to be greater than 19mm.

(6) For accommodation and service spaces, the diameter of the nozzle need not exceed 12mm.

(7) Every dual-purpose nozzle provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall be in accordance with the requirements of the Performance Standards for such nozzles referred to in clause 2 of this code.

19. International shore connection—Any international shore connection provided in compliance with the Codes of Practice issued under the Shipping (Fire Appliances) Regulations 1989 shall be constructed in accordance with the requirements of the Performance Standards for such a connection as provided under and referred to in Clause 2 of this code.

20. Fire extinguishers—(1) Non-portable foam and carbon dioxide fire extinguishers provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall be constructed in accordance with the requirements of the Performance Standards for such extinguishers as provided under clause 2 of this code.

(2) Except where specified elsewhere in the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 the capacity of portable fire extinguishers shall be in accordance with the requirements of the Performance Standards for such extinguishers referred to in clause 2 of this code.

(3) Where portable dry powder fire extinguishers are provided in accordance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 either in accommodation and service spaces or in machinery spaces, their number shall not exceed 1/2 of the total number of extinguishers provided in either of those spaces.

(4) Fire extinguishers provided for use in any ship to which the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply shall not be of a type which contains an extinguishing medium which either itself or when in use gives off toxic gases in such quantities as to be harmful to persons. The use of carbon dioxide fire extinguishers is not prohibited under this sub-clause but such extinguishers shall not be located in or adjacent to sleeping accommodation.

(5) Every fire extinguisher provided in compliance with Codes of Practice shall be kept fully charged at all times.

(6) In ships of Class I, II, III, VII, VIIA and VIII, a spare charge shall be provided for every portable fire extinguisher provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 except that, for each such fire extinguisher which is of a type which cannot readily be recharged while the ship is at sea, an additional portable fire extinguisher of the same type, or its equivalent, shall be provided instead of a spare charge.

(7) In ships of Classes I, II, III, VII, VIIA and VIII, a spare charge shall be provided for every 45 litre foam fire extinguisher provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989.

(8) For the purposes of the Codes of Practice 135 litres of foam fire extinguisher may be taken as sufficient to provide a 150mm depth of foam over 9m².

(9) One of the portable fire extinguishers intended for use in any space shall be stored near the entrance to that space.

21. Fire buckets—Every fire bucket provided in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall be red in colour and shall be clearly marked with the word "Fire" according to the requirements of the Performance Standard referred to in clause 2 of this code.

22. Fixed pressure water-spraying systems for machinery spaces—The design, construction, installation and

operational capabilities of every fixed pressure water spraying system for machinery spaces fitted in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall comply with the requirements of the Performance Standard for such a system referred to in clause 2 of this code.

23. Fixed pressure water-spraying system for special category spaces—The design, construction, installation and operational capabilities of every fixed pressure water-spraying system for special category spaces fitted in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall comply with the requirements of the Performance Standard for such systems referred to in clause 2 of this code.

24. Fixed fire-smothering gas installations—(1) This clause applies to every fixed fire-smothering gas installation fitted in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 other than where specified in fire appliances (Codes of Practice).

(2) In general steam should not be used as a fire-extinguishing medium in fixed fire-extinguishing systems but where the Chief Surveyor has permitted its use it shall be used only in restricted areas as an addition to the required fire-extinguishing medium and with the proviso that the boiler or boilers available for supplying steam shall have an evaporation of at least 1.0 kg of steam per hour for each 0.75m³ of the gross volume of the largest space so protected. In addition to complying with the foregoing requirements the systems in all respects shall be as determined by, and to the satisfaction of, the Chief Surveyor. Steam shall not be used for fire smothering purposes in compartments containing dangerous goods of Class 1.

(3) The design, construction, installation and operational capabilities of every fixed fire-smothering gas installation fitted in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall comply with the requirements of the Performance Standard for such installations as provided by and referred to in clause 2 of this code.

25. Fixed high-expansion foam fire-extinguishing systems—The design, construction and operational capability of every fixed high-expansion foam fire extinguisher system fitted in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall comply with the requirements of the Performance Standard for such systems as provided by and referred to in clause 2 of this code.

26. Fixed low-expansion foam fire-extinguishing systems—The design, construction, installation and operational capability of every fixed low-expansion foam fire-extinguishing system fitted additional to any requirements of Codes of Practice shall comply with the requirements of the Performance Standard for such systems as provided by and referred to in clause 2 of this code.

27. Portable air-foam applicator unit—Every portable air-foam applicator unit provided in accordance with the Codes of Practice shall comply with the requirements of the Performance Standard for such units as provided by and referred to in clause 2 of this code.

28. Automatic sprinkler, fire-alarm, and fire-detection systems—The design, construction, installation and operational capabilities of every automatic sprinkler, fire-alarm, and fire-detection system shall comply with the requirements of the Performance Standard for such systems as provided by and referred to in clause 2 of this code.

29. Fixed fire detection and fire alarm systems—The design, construction, installation and operational capabilities of every fixed fire detection and fire alarm system fitted in compliance with the Codes of Practice shall comply with the requirements of the Performance Standard for such systems as provided by and referred to in clause 2 of this code.

30. Fire crew outfits—(1) Every fire crew outfit carried in compliance with the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 shall consist of:

(a) Personal equipment in compliance with the requirements of the Performance Standard for such equipment as provided by and referred to in clause 2 of this code;

(b) Breathing apparatus of an approved type complying with the requirements of the Performance Standard for such apparatus and spare cylinders as provided by and referred to in clause 2 of this code.

(2) Fire crew outfits shall be kept in readily accessible positions which are not likely to be cut off in the event of fire. Where more than 1 fire crew outfit is carried, they shall be kept in places as widely separated as practicable and reasonable, having regard to their accessibility at all times, their protection from damage, and their proximity to those spaces where they are most likely to be needed.

31. Means for stopping machinery, shutting-off oil-fuel suction-pipes, and closing of openings—(1) In every ship to which the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply, there shall be provided means for stopping ventilating fans serving machinery, accommodation, service, special-category, and cargo spaces.

(a) For machinery and cargo spaces there shall be provided means for closing all skylights, doorways, ventilators, ventilator dampers, openings in funnels which normally allow exhaust ventilation, and other openings to such spaces. Those means shall be capable of being operated from positions outside the said spaces which would not be made inaccessible by a fire within those spaces.

(b) In ships of Class I or II means shall also be provided for opening skylights to machinery spaces from positions outside those spaces which would not be made inaccessible by a fire within those spaces or for otherwise permitting the controlled release of smoke.

(2) In every ship to which the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply, machinery driving forced and induced draught-fans, oil-fuel transfer pumps, oil-fuel unit pumps, and other similar fuel pumps shall be fitted with remote controls situated outside the spaces in which such machinery or pumps are situated. Those controls shall be capable of stopping the machinery or pumps in the event of fire in the said spaces.

(3) In every ship to which the Codes of Practice issued under The Shipping (Fire Appliances) Regulations 1989 apply, every pipe connected to any oil-fuel storage, or daily-service tank, not being a double-bottom tank, which if damaged would permit discharge of the contents so as to cause a fire hazard shall be fitted with a valve or cock, which shall be secured to the tank to which it is connected. In the case of every ship of Class I, II or III, and of every ship of Class IV, V, VI, or IX of 24m in length or over, and every ship of Class X of 24m in length or over, and in every ship of Class VII, VIIA, or VIII, those valves or cocks shall be capable of being closed from a readily accessible position outside the space in which the tank is situated; but in the case of any inlet pipe to such a tank a non-return valve similarly secured to the tank may be substituted.

(4) In the case of a deep oil-fuel tank traversed by any shaft or pipe tunnel, a valve shall be fitted on the tank, but an additional valve or valves may be fitted on the pipeline or lines outside the tunnel or tunnels to enable control to be exercised in the event of fire.

32. Availability of fire-fighting appliances—(1) At least 1 of the portable fire extinguishers intended for use in any space shall be stowed near the entrance to that space.

(2) All movable fire appliances shall be stowed where they are readily accessible from the spaces in which they are intended to be used:

Provided that in passenger ships the following items of movable equipment may, with the approval of the Chief Surveyor be stowed in 1 or more fire-appliance rooms, which shall be of steel construction, be located in such position or positions as not likely to be cut off by or inaccessible in the event of a fire, and from which the equipment can rapidly and easily be taken to a fire by the ship's fire-fighting personnel, namely:

- (a) Fire crew outfits;
- (b) Portable air-foam applicators or other portable foam-making appliances;
- (c) Water-fog applicators;
- (d) Spare hoses, nozzles, and axes;
- (e) Any other portable fire-fighting appliances approved by the Chief Surveyor.

33. Liquefied petroleum gas appliances—Where liquefied petroleum gas consuming appliances are fitted below the main deck every space containing such an appliance should be provided with fixed gas detection equipment.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

18

The Ship Construction (Code of Practice For Ships Not Required to Comply With The Safety Convention) Notice 1989

Pursuant to Section 197 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Ship Construction (Code of Practice For Ships Not Required To Comply With The Safety Convention) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Construction) Regulations 1989.

3. Application—(1) This Code shall apply to every new New Zealand passenger and/or cargo ship which is

a) A foreign going non-passenger ship of Class VII of less than 500 gross tonnage and less than 45m in length.

b) A passenger or cargo ship of Class II, III, VI, VIIA, VIII and IX of less than 45m in length which proceeds beyond extended river limits, other than a hydrofoil ship or surface effect ship of Class II, III, and VI.

c) A passenger or cargo ship of Class IV, V, and IX which operates only within river and extended river limits, other than a hydrofoil ship or surface effect ship of Class IV and V.

(2) This Code does not apply to Class X (Fishing Vessels).

Schedule

The Ship Construction (Code of Practice For Ships Not Required to Comply With The Safety Convention) Notice 1989

CONTENTS

Part I—Interpretation

1. Definitions and Meanings

Part II—Ships Structure

2. Structural Strength

3. Scantlings

Part III—Subdivision and Stability

Section A—Subdivision

4. Watertight Bulkheads

5. Construction and Initial Testing of Watertight Bulkheads, etc.

6. Openings in Watertight Bulkheads, etc.

7. Means of Closing Openings in Watertight Bulkheads

8. Watertight Doors

9. Openings in Sides of the Ship

10. Weather Deck

Section B—Stability

11. Stability Information

Part IV Bilge Pumping Arrangements

12. General

13. Bilge Pumps

14. Number of Bilge Pumps

15. Bilge Pipes

16. Bilge Alarms

17. Sounding Pipes

Part V Machinery Installations

18. General

19. Means of Going Astern

20. Machinery

21. Machinery Controls

22. Steam Boilers and Boiler Feed Systems

23. Steam Pipe Systems

24. Air Pressure Systems

25. Cooling Water Systems

26. Oil and Fuel Installations

27. Lubricating and Other Oil Systems

28. Ventilation Systems in Machinery Spaces

29. Communication between Navigating Bridge and Machinery Space

30. Steering Gear

31. Protection Against Noise

32. Spare Gear and Tools

Part VI Electrical Installation

33. Application

34. General

35. Electrical Systems

36. Emergency Source of Electrical

Power: Ships of Class II

37. Switchboards

38. Batteries

39. Cables and their Installation

40. Generators, Motors and Control Gear

41. Heating and Cooking Appliances

42. Accessories

43. Lightning Protection

44. Earthing

45. Shore Power

46. Testing of a Completed Installation

Part VII Fire Protection

47. General

48. Structural Requirements for Ships of Less than 24m Length

49. Structural Requirements for Ships 24m Length and Over and of Class II, III, VII, VIIA and VIII

50. Structural Requirements for Ships of 24m in Length and Over and of Class IV, V, VI and IX

51. Spaces Containing Engines Using a Fuel with a Flashpoint Below 60°

52. Heating and Cooking Installations

53. Storage of Gas Cylinders and Dangerous Materials

54. Ventilation Systems

Part VIII Miscellaneous Provisions

55. Ballasting

56. Anchors and Chain Cables

57. Hawsers and Warps

58. Means of Escape

59. Guard rails, Stanchions and Bulwarks

PART I

Interpretation

1. Definitions and meanings—In this code of practice, unless the context otherwise requires.

“The Act” means the Shipping and Seamen Act 1952.

“‘A’ Class Divisions” means those divisions formed by bulkheads and decks which comply with the following:

- (a) they shall be constructed of steel or other equivalent material;
- (b) they shall be suitably stiffened;
- (c) they shall be so constructed so as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test; and
- (d) they shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C above the original temperature, within the time listed below:

Class ‘A-60’ 60 minutes,
Class ‘A-30’ 30 minutes,
Class ‘A-15’ 15 minutes; and
Class ‘A-0’ 0 minutes.

The Chief Surveyor may require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise.

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

“Approved” means approved by the Director.

“Auxiliary steering gear” means the equipment other than any part of the main steering gear necessary to steer the ship in the event of failure of the main steering gear but not including the tiller, quadrant or components serving the same purpose:

“‘B’ Class Divisions” means those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

- (a) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test;
- (b) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C above the original temperature, within the time listed below:

Class ‘B-15’ 15 minutes,

Class ‘B-0’ 0 minutes; and

(c) they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of ‘B’ Class divisions shall be non-combustible with the exception that combustible veneers may be permitted provided they meet the relevant requirements of clauses 50 and 51 of this Code.

The Chief Surveyor may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.

“Breadth of the ship” means the extreme width from outside of frame to outside of frame at or below the ship’s deepest sub-division load line:

“Bulkhead deck” means the uppermost deck up to which transverse watertight bulkheads are carried:

“‘C’ Class Divisions” means those divisions constructed of approved non-combustible materials. They need meet no requirements relative to the passage of smoke and flame nor the limiting of temperature rise.

“Cargo spaces” means all spaces used for cargo (including cargo oil tanks) and trunks to such spaces.

“Chief Surveyor” means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy:

“Classification of ships” is according to the Shipping (Construction) Regulations 1989.

“Control stations” means spaces in which the ship’s radio or main navigating equipment or the emergency source of power is located or where the fire recording or fire control equipment is centralised.

“Dead ship condition” means the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

“Director” means the person who is for the time being the Director of the Maritime Transport Division of the Ministry of Transport; and includes his deputy:

“‘F’ Class Divisions” means those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

- (a) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first one-half hour of the standard fire test; and
- (b) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature at any point, including any joint, rise more than 225°C above the original temperature, up to the end of the first one-half hour of the standard fire test.

The Chief Surveyor may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.

“Freeboard deck” has the same meaning as in the Load Line Rules 1970.

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“Independent power pump” means a pump operated by power otherwise than from the ship’s main engines:

“Low Flame Spread Material” means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Chief Surveyor by an established test procedure.

“Machinery space” for the purpose of part III of this Code of Practice, means any space extending from the moulded base line of the ship to the margin line and between the

extreme main transverse watertight bulkheads bounding the spaces containing the main and auxiliary propelling machinery, boilers serving the needs of propulsion, when installed, and the permanent coal bunkers, if any:

“Machinery spaces” for the purposes of this Code of Practice except for part III of this Code, means machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces.

“Machinery spaces of category A” means those spaces and trunks to such spaces which contain:

- (a) internal combustion machinery used for main propulsion; or
- (b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375kW;

or

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

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

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

“Maximum ahead service speed” is the greatest speed which the ship is designed to maintain in service at sea at the deepest sea-going draught.

“Navigable speed” means the minimum speed at which a ship can be effectively steered in the ahead direction.

“New ship” means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached, on or after the date on which the Shipping (Construction) Regulations 1989 come into force; and for the purposes of this definition, “similar stage of construction” means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 percent of the estimated mass of the structural material of the completed ship, whichever is the less.

“Non-combustible Material” means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C, this being determined to the satisfaction of the Chief Surveyor by an established test procedure. Any other material is a combustible material.

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

“Oil-fuel unit” means the equipment used for the preparation of oil fuel for delivery to the oil burners of an oil-fired boiler, or equipment used for the preparation of heated oil for delivery to an internal-combustion engine; and includes any oil-pressure pumps, filters and heaters dealing with oil at a pressure of more than 180 kilopascals gauge:

“Permeability”, in relation to a space, means the percentage of that space which can be occupied by water. The volume of a space which extends above the margin line shall be measured only to the height of that line:

“Service spaces” means those spaces used for galleys, pantries containing cooking appliances, lockers, mail and specie rooms, store-rooms, workshops other than those

forming part of the machinery spaces, and similar spaces and trunks to such spaces.

“Standard Fire Test” means one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4.65 square metres and a height (or length of deck) of 2.44 metres resembling as closely as possible the intended construction and including where appropriate at least one joint. The standard time temperature curve is defined by a smooth curve drawn through the following points:

- at the end of the first 5 minutes 538°C
- at the end of the first 10 minutes 704°C
- at the end of the first 30 minutes 843°C
- at the end of the first 60 minutes 927°C

“Steel or Other Equivalent Material” means steel or any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation).

“Suitable”, in relation to material, means approved by the Director as suitable for the purpose for which it is used:

“Summer load waterline” has the same meaning as in the Load Line Rules 1970.

“Surface effect ship” means a ship the weight of which in the normal operating condition is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

“Watertight”, in relation to a structure, means capable of preventing the passage of water through the structure in any direction:

“Weathertight” has the same meaning as in the Load Line Rules 1970.

Other expressions defined in the Act have the meaning so defined.

PART II

SHIPS STRUCTURE

2. Structural Strength—(1) The structural strength of every ship shall be sufficient for the service for which the ship is intended.

3. Scantlings—(1) The scantlings of the main structure of every ship shall either:

- (a) Comply with the appropriate scantling requirements of a classification society approved by the Chief Surveyor or
- (b) Comply with other codes of practice approved by the Chief Surveyor for the size and type of ship intended or
- (c) Be based on theoretical calculations and practical tests of the ship’s structural integrity, particularly with prototypes, provided such calculations and tests are approved by the Chief Surveyor.

PART III

SUBDIVISION AND STABILITY

A. SUBDIVISION—

4. Watertight Bulkheads—(1) Every ship of 15m in length or over to which this Code applies shall be fitted with a collision bulkhead which shall be watertight up to the freeboard deck. This bulkhead shall be located at a distance from the forward perpendicular of not less than 5 percent of the length of the ship or 10m, whichever is the less, and, except as may be permitted by the Chief Surveyor, not more than 8 percent of the length of the ship.

(2) Where any part of the ship below the waterline extends forward of the forward perpendicular, e.g. a bulbous bow, the

distances stipulated in subclause (1) of this clause shall be measured from a point either:

- (a) at the mid-length of such extension; or
- (b) at a distance 1.5 percent of the length of the ship forward of the forward perpendicular; or
- (c) at a distance 3m forward of the forward perpendicular; whichever gives the smallest measurement.

(3) The bulkhead may have steps or recesses provided they are within the limits prescribed in subclause (1) or (2) of this clause.

(4) Where a long forward superstructure is fitted the collision bulkhead shall be extended weathertight to the deck next above the freeboard deck. The extension need not be fitted directly above the bulkhead below provided it is located within the limits prescribed in subclause (1) or (2) of this clause with the exemption permitted by subclause (5) of this clause, and the part of the deck which forms the step is made watertight.

(5) Where bow doors are fitted and a sloping loading ramp forms part of the extension of the collision bulkhead above the freeboard deck the part of the ramp which is more than 2.3m above the freeboard deck may extend forward of the limit specified in subclause (1) or (2) of this clause. The ramp shall be watertight over its complete length.

(6) Every ship to which this Code applies and which carries more than 50 passengers shall be fitted with the number of watertight bulkheads as are required to provide one compartment subdivision, i.e. so that the fully loaded ship shall remain afloat with positive stability with any one main compartment flooded. In determining the floodable length of compartments the following permeabilities shall be assumed.

Machinery spaces	85%
Cargo spaces and stores	60%
Other spaces	95%

(7) Every ship of 15m in length or over to which this Code applies shall be fitted with an afterpeak bulkhead and bulkheads separating the machinery space from any cargo and passenger spaces forward and aft. These bulkheads shall be made watertight up to the bulkhead deck.

(8) Every ship of less than 15m length shall be provided with such watertight bulkheads or approved internal buoyancy as the Chief Surveyor considers necessary for the safety of the ship and persons on board.

5. Construction and Initial testing of Watertight Bulkheads, etc—(1) Each watertight subdivision bulkhead, whether transverse or longitudinal, shall be constructed in such a manner that it shall be capable of supporting, with a proper margin of resistance, the pressure due to the maximum head of water which it might have to sustain in the event of damage to the ship. The construction of these bulkheads shall be to the satisfaction of the Chief Surveyor.

(2) Steps and recesses in bulkheads shall be watertight and as strong as the bulkhead at the place where each occurs.

(3) Where frames or beams pass through a watertight deck or bulkhead, such deck or bulkhead shall be made watertight without the use of wood or cement.

(4) Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels. Watertight ventilators and trunks shall be carried at least up to the freeboard deck.

(5) Main compartments may be tested for watertightness either by filling them with water or by a hose test. Such test shall be carried out in the most advanced stage practicable of the fitting out of the ship. In every case, a thorough inspection of the watertight bulkheads shall be carried out.

(6) The forepeak, double bottoms (including duct keels) and inner skins shall be tested with water to a head corresponding to the requirements of subclause (1) of this clause.

(7) Tanks which are intended to hold liquids, and which form

part of the subdivision of the ship, shall be tested for tightness with water to a head prescribed by the Chief Surveyor but in no case shall the test head be less than 900mm above the top of the tank.

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

(9) The tests referred to in subclauses (5) and (6) of this clause are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required.

6. Openings in Watertight Bulkheads etc—(1) The number of openings in bulkheads and other structures required by this Code to be watertight shall be the minimum compatible with the design and proper working of the ship.

(2) So far as practicable, trunks installed in connection with ventilation, forced draught, or refrigeration systems shall not pierce such bulkheads or structures.

(3) Not more than 1 doorway (other than a bunker or tunnel doorway) shall pierce a watertight bulkhead in the machinery space. If any such bulkhead is pierced by a doorway, the doorway shall be placed so as to have the sill as high as possible in the ship.

(4) Doorways, manholes, and access openings shall not be fitted in the collision bulkhead below the freeboard deck.

(5) The number of openings in the extension of the collision bulkhead above the freeboard deck shall be restricted to the minimum compatible with the design and normal operation of the ship. All such openings shall be capable of being closed weathertight.

(6) Notwithstanding anything in subclauses (3) and (4) of this clause the Chief Surveyor may permit a ship to be fitted with doorways, manholes, or access openings in watertight bulkheads if he is satisfied that:

(a) The doorways, manholes or access openings are necessary for the proper working of the ship; and

(b) The number of such doorways, manholes, or access openings in the ship is the minimum compatible with the design and proper working of the ship, and they are fitted at the highest level compatible with the working of the ship.

(7) In every ship to which this Code applies:

(a) Valves and cocks not forming part of a pipe system shall not be fitted in any bulkhead required by this Code to be watertight; and

(b) If any such bulkhead is pierced by pipes, scuppers, electric cables, or other similar fittings, provision shall be made which will ensure that the watertightness of the bulkhead is not thereby impaired; and

(c) Pipes piercing the collision bulkhead shall be fitted with valves operable from above the freeboard deck and the valve chest shall be secured at the bulkhead inside the forepeak. The valves may be fitted on the after side of the collision bulkhead provided that the valves are readily accessible under all service conditions and the space in which they are located is not a cargo space. All valves shall be of material and type approved by the Chief Surveyor. Provided also that in ships with a gross tonnage of less than 500 the Chief Surveyor may permit a watertight bulkhead to be pierced by a valve for draining into the compartment immediately adjacent to that bulkhead.

7. Means of Closing Openings in Watertight Bulkheads—Efficient means shall be provided for closing and making watertight all openings in bulkheads and other structures required by this Code to be watertight.

8. Watertight Doors—(1) In every ship to which this Code applies in which a watertight door is provided to maintain the watertight integrity of a bulkhead, every such watertight door

shall be made of material approved by the Chief Surveyor and shall be efficiently constructed for its intended duty.

(2) Every watertight door of the sliding type shall be capable of being operated by efficient hand-operated gear both at the door itself and from an accessible position above the bulkhead deck.

(3) The operating gear for operating from above the bulkhead deck any sliding watertight door fitted in the bulkhead of a machinery space shall be situated outside the machinery space, unless such a position is inconsistent with the efficient arrangement of the necessary gearing and an alternative position is approved by the Chief Surveyor.

(4) Where there is access from the lower part of a machinery space to a watertight shaft tunnel, the access opening shall be provided with a sliding watertight door which shall be capable of being operated locally on both sides of the door.

(5) Means shall be provided at remote operating positions to indicate when a sliding door is closed.

(6) Watertight doors shall be capable of being operated when the ship is inclined up to 15 degrees.

(7) The Chief Surveyor may permit the fitting of hinged watertight doors in approved positions provided these are fitted with quick action closing devices operable from each side of the bulkhead.

(8) Each sliding watertight door shall be tested by water pressure to a head up to the freeboard deck. The test shall be made before the ship is put into service, either before or after the door is fitted. Hinged watertight doors shall be hose tested.

9. Openings in the Sides of the Ship—(1) Efficient means shall be provided for preventing the accidental admission of water into any ship through any openings in the sides of the ship.

(2) Side scuttles, windows, and other openings in the shell plating, superstructure, and deckhouses and their means of closing shall be of efficient design and construction and of sufficient strength, having regard to the space in which they are fitted and to the intended service of the ship.

(3) Efficient inside deadlights, which can be effectively closed and secured watertight, shall be provided for all sidescuttles to spaces below the weather deck in every ship proceeding beyond extended river limits.

(4) Every sidescuttle below the bulkhead deck in every ship proceeding beyond extended river limits shall be fitted with an efficient hinged deadlight permanently attached so that it can be effectively closed and secured watertight.

(5) No sidescuttles shall be fitted in any spaces which are appropriated exclusively to the carriage of cargo or coal.

(6) The arrangements for closing each such opening shall be consistent with its intended purpose, and shall be such as will ensure watertightness.

(7) Each inlet and discharge led through the shell plating below the bulkhead deck shall be fitted with efficient and readily accessible means for preventing the accidental admission of water into the ship.

(8) All cocks and valves attached to inlets or discharges, other than inlets or discharges connected with machinery, shall be made of steel, bronze, or other material approved by the Chief Surveyor.

(9) Main and auxiliary inlet and discharges connected with machinery shall be fitted with readily accessible cocks or valves between the pipes and the ship's shell plating or between the pipes and a fabricated box attached to the shell plating. All such cocks or valves attached to such inlets or discharges and all fittings outboard thereof shall be made of steel, bronze, or such other material approved by the Chief Surveyor. If made of steel, such cocks and valves shall be protected against corrosion.

(10) All discharge pipes led through the shell plating below the

bulkhead deck and the valves relating thereto shall be protected from damage.

(11) Any gangway port, cargo port, or re-fuelling port fitted below the bulkhead deck shall be of adequate strength, and its lowest point shall not be below the ship's deepest load waterline.

10. Weather Deck—(1) The bulkhead deck or a deck above the bulkhead deck shall be weathertight. All openings in a weathertight deck shall have coamings of height and strength approved by the Chief Surveyor and shall be provided with efficient and rapid means of closing so as to make them weathertight. Freeing ports or scuppers of a total area approved by the Chief Surveyor shall be provided for clearing every such deck of water under all weather conditions.

(2) Where the height above the summer load-waterline of an enclosed cargo deck is such that in the opinion of the Chief Surveyor the operation of overside discharging scuppers from that space might be rendered ineffective by sinkage or inclining following damage to the ship, the Chief Surveyor may require drain wells to be fitted port and starboard connected to the bilges by pipes fitted with screw-down non-return valves operated from the deck above the cargo deck, or other suitable arrangements. The number, size and disposition of the drain wells and drain pipes shall be approved by the Chief Surveyor.

B. STABILITY—

11. Stability Information—(1) Every ship of 24 metres in length or over and every ship which carries more than 50 passengers shall be inclined upon its completion and the elements of its stability determined.

(2) For every such ship stability information shall be supplied by the owner in an approved form to the Chief Surveyor to enable the Chief Surveyor to be satisfied that the ship's stability is adequate for its intended service.

(3) Every ship of less than 24m in length which carries 50 or fewer passengers shall on its completion be subject to a test with two-thirds of the passengers on one side of the ship and one third on the other side, and the resulting angle shall not exceed seven degrees. A further test shall demonstrate that when all passengers are on one-side of the ship the angle of heel shall not exceed fifteen degrees. For the purpose of each test the passengers shall be located at one-quarter the beam from the ship's centre line.

(4) In the case of every other ship to which this Code applies a Surveyor shall be satisfied that the ship has adequate stability for its intended service.

PART IV

BILGE PUMPING ARRANGEMENTS

12. General—(1) An efficient bilge pumping system shall be provided capable of pumping from and draining any watertight compartment other than a space permanently appropriated for the carriage of fresh water, water ballast, oil fuel or liquid cargo and for which other efficient means of pumping are provided, under all practical conditions. Efficient means shall be provided for draining water from insulated holds.

Provided that the Chief Surveyor may allow the provision for drainage to be omitted in a particular compartment if the Chief Surveyor is satisfied that the provision of drainage would be undesirable or unnecessary and that the safety of the ship would not be impaired by that omission.

(2) The bilge and ballast pumping systems shall be so arranged as to prevent water passing from the sea or from water-ballast spaces into the ship's cargo spaces or into any part of the machinery space or from one watertight compartment in the ship to another. The bilge connection to any pump which effects suction from the sea or from water-ballast spaces shall be made by means of either a non-return valve or a cock which cannot be opened at the same time to the bilges and to the sea or to the bilges and the water-ballast spaces. Valves in bilge

distribution boxes shall be of a non-return type. An arrangement of lock-up valves or of blank flanges shall be provided to prevent any deep tank in such a ship being inadvertently run up from the sea when it contains cargo or pumped out through a bilge pipe when it contains water ballast, and instructions for the working of such an arrangement shall be conspicuously displayed nearby.

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

(4) Bilge suction in the machinery space and tunnel well of every ship to which this Code applies shall be led from readily accessible mud boxes placed wherever practicable above the level of the working floor of the space. The boxes shall have straight tailpipes to the bilges and covers secured in such a manner as will permit them to be readily opened and closed. The suction ends in hold spaces and tunnel wells shall be enclosed in strum boxes having perforations approximately 10mm in diameter, and the combined area of such perforations shall be not less than twice that of the end of the suction pipe. Strum boxes shall be so constructed that they can be cleared without breaking any joint of the suction pipe.

13. Bilge Pumps—(1) Every bilge pump shall be self-priming unless efficient means of priming are provided. Every such pump, other than a pump provided for peak compartments only, shall be so arranged as to be capable of drawing water from any space required by clause 12(1) of this Part of the Code to be drained.

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

(3) Hand pumps shall be workable from above the ship's bulkhead deck, if any. They shall be of a type which is easily maintained in efficient condition and should preferably be of the bucket or plunger displacement type. Diaphragm type pumps are acceptable provided such pumps do not also serve as fire pumps. Semi-rotary pumps may be used only for draining small individual compartments such as peak tanks.

14. Number of Bilge Pumps—(1) Bilge pumps shall be provided in accordance with the following table:

Class of Ship	Length of Ship	Main Engine Pumps	Independent Power Pumps	Hand Pumps
II, III	Under 15m	1*	—	1*
	15m and under 30m	1*	1	—
	30m and under 45m	—	2	—
IV, VI	Under 15m	1*	—	1
	15m and over	1*	1	—
V	Under 15m	—	—	1
	15m and over	1*	—	1
VII, VIIA, VIII	Under 15m	1*	—	—
	15m and under 45m	1*	1	—
IX	Under 15m	—	—	1
	15m and under 30m	1*	—	1*
	30m and under 45m	1	1	—
	45m	—	—	—

* Each of these pumps may be replaced by an independent power pump.

(2) In every ship of Class II, III and VI of 30m in length or over, one of the pumps shall be an efficient emergency pump of a submersible type having its source of power and the necessary controls situated above the ship's bulkhead deck.

15. Bilge Pipes—(1) All pipes from the pumps for draining cargo spaces or any part of the machinery space shall be distinct from pipes which may be used for filling or emptying spaces in which water or oil is carried. All bilge suction pipes shall be of steel or other approved material of approved wall thickness. Bilge suction pipes in such a ship shall not be led through oil tanks, unless the pipes are enclosed in an oil-tight

trunkway. Such pipes shall not be led through double-bottom tanks. Such pipes shall be made with flanged joints, and shall be thoroughly secured in position and protected where necessary against the risk of damage. Efficient expansion joints or bends shall be provided in each line of pipe.

(2) The internal diameter of main and branch bilge suction pipes shall be determined to the nearest 5mm calculated according to the following formulae:

$$d_m = 1.68 \sqrt{L(B+D)} + 25\text{mm}$$

$$d_b = 2.15 \sqrt{C(B+D)} + 25\text{mm}$$

where

d_m = internal diameter of the main bilge suction pipe in millimetres.

d_b = internal diameter of the branch bilge suction pipe in millimetres

L = length of ship in metres

B = breadth of ship in metres

D = moulded depth of ship to bulkhead deck in metres

C = length of compartment in metres.

No main bilge suction pipe in any ship of Class II, III, VII, VIIA or VIII shall be less than 65mm in bore, and no branch suction pipe shall be less than 50mm in bore. No bilge suction pipe in any ship of Class IV, V, VI and IX shall be less than 32mm in bore provided that in such ships of less than 10 metres in length no bilge suction pipe shall be less than 25mm bore.

16. Bilge Alarms—In every ship other than an open or partially decked ship, the space in which the main propulsion machinery is located and which contains through hull fittings shall be fitted with a bilge level device which is connected to an audible alarm located near the steering position. The power supply for the audible alarm shall be available at all times there is any person on board.

17. Sounding Pipes—In every ship of 24 metres in length or over, all tanks forming part of the structure of the ship and all watertight compartments, not being part of the machinery space, shall be provided with efficient sounding arrangements which shall be protected where necessary against damage. Where such arrangements consist of sounding pipes, a thick steel doubling plate shall be securely fixed below each sounding pipe for the sounding rod to strike upon. All such sounding pipes shall extend to positions above the ship's bulkhead deck, which shall at all times be readily accessible. Sounding pipes for bilges, coffer dams, and double-bottom tanks, situated in the machinery space may terminate in an accessible position in the machinery space provided they are fitted with closing cocks approved by the Chief Surveyor. Sounding pipes for the bilges of insulated holds shall be insulated and not less than 65mm in diameter.

PART V

MACHINERY INSTALLATIONS

18. General—(1) The machinery, boilers and other pressure vessels, associated piping systems and fittings shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards. The design shall have regard to materials used in construction, the purpose for which the equipment is intended, the working conditions to which it will be subjected and the environmental conditions on board.

(2) Special consideration will be given to the reliability of single essential propulsion components and the Chief Surveyor may require a separate source of propulsion power sufficient to give the ship a navigable speed, especially in the case of unconventional arrangements.

(3) All boilers, all parts of machinery, all steam, hydraulic,

pneumatic and other systems and their associated fittings which are under internal pressure shall be subjected to appropriate tests including a pressure test before being put into service for the first time.

(4) Provision shall be made to facilitate cleaning, inspection and maintenance of main propulsion and auxiliary machinery including boilers and pressure vessels.

19. Means of Going Astern—(1) Sufficient power for going astern shall be provided to secure proper control of the ship in all normal circumstances.

20. Machinery—(1) Means shall be provided to ensure that the machinery can be brought into operation from the dead ship condition without external aid.

(2) Where risk from overspeeding of machinery exists, means shall be provided to ensure that the safe speed is not exceeded.

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

21. Machinery Controls—(1) Main and auxiliary machinery essential for the propulsion and safety of the ship shall be provided with effective means for its operation and control.

(2) Where remote control of propulsion machinery from the navigating bridge is provided, the following shall apply:

(a) the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge under all sailing conditions, including manoeuvring;

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

(c) the main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system;

(d) where a machinery room is manned, propulsion machinery orders from the navigating bridge shall be indicated in the main machinery control room or at the propulsion machinery control position as appropriate;

(e) remote control of the propulsion machinery shall be possible only from one location at a time; at such locations interconnected control positions are permitted. At each location there shall be an indicator showing which location is in control of the propulsion machinery;

(f) it shall be possible for all machinery essential for the safe operation of the ship to be controlled from a local position, even in the case of failure in any part of the remote control systems; and

(g) indicators shall be fitted on the navigating bridge for pitch position in the case of controllable pitch propellers.

22. Steam Boilers and Boiler Feed Systems—(1) Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. However, having regard to the output or any other features of any boiler or unfired steam generator, the Chief Surveyor may permit only one safety valve to be fitted if the Chief Surveyor is satisfied that adequate protection against overpressure is thereby provided.

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

(3) Every steam generating system which provides services essential for the safety of the ship, or which could be rendered dangerous by the failure of its feedwater supply, shall be provided with not less than two separate feedwater systems

from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Unless overpressure is prevented by the pump characteristics means shall be provided which will prevent over-pressure in any part of the systems.

(4) Boilers shall be provided with means to supervise and control the quality of the feedwater. Suitable arrangements shall be provided to preclude, as far as practicable, the entry of oil or other contaminants which may adversely affect the boiler.

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

23. Steam Pipe Systems—(1) In every ship every steam pipe and every fitting connected thereto through which steam may pass shall be so designed and constructed as to withstand the maximum working stresses to which it may be subjected, with a factor of safety which is adequate having regard to:

(a) the material of which it is constructed, and

(b) the working conditions under which it will be used.

(2) Without prejudice to the generality of the foregoing, every steam pipe or fitting shall, before being put into service for the first time, be subjected to a test by hydraulic pressure to a pressure suitably in excess of the working pressure to be determined having regard to the requirements of sub-clause 1(a) and (b) of this clause and every such steam pipe or fitting shall be maintained in an efficient condition.

(3) Steam pipes shall be adequately supported.

(4) Provision shall be made which will avoid excessive stress likely to lead to the failure of any such steam pipe or fitting, whether by reason of variation in temperature, vibration or otherwise.

(5) Efficient means shall be provided for draining every such steam pipe so as to ensure that the interior of the pipe is kept free of water and that water hammer action will not occur under any condition likely to arise in the course of the intended service of the ship.

(6) If a steam pipe may receive steam from any source at a higher pressure than it can otherwise withstand with an adequate factor of safety, an efficient reducing valve, relief valve and pressure gauge shall be fitted to such pipe.

24. Air Pressure systems—(1) In every ship in which machinery essential for the propulsion and safety of the ship or of persons on board is required to be started, operated or controlled solely by compressed air, there shall be provided an efficient air system which shall include a sufficient number of air compressors and compressed air storage vessels to ensure that an adequate supply of compressed air is available under all conditions likely to be met in service.

(2)(a) The parts of each compressed air system which are subjected to air pressure shall be designed and constructed to withstand, with an adequate factor of safety, the maximum working stresses to which they may be subjected, and every air pressure pipe or fitting in such system, other than a pneumatic control system, shall, before being put into service for the first time, be subject to a hydraulic test suitably in excess of the maximum working pressure to which it may be subjected and be maintained in an efficient condition.

(b) Means shall be provided to prevent overpressure in any part of any such compressed air system and, where water jackets or castings of air compressors and coolers might otherwise be subjected to dangerous overpressure due to leakage into them from air pressure parts, suitable pressure relief arrangements shall be provided.

(c) Provision shall be made to reduce to a minimum entry of oil into any such compressed air system and to drain the system. Provision shall also be made to protect the system from the effects of internal explosion.

(d) All discharge pipes from starting air compressors shall lead directly to the starting air receivers, and all starting air pipes from the air receivers to main or auxiliary engines shall be entirely separate from the compressor discharge pipe system.

25. Cooling Water Systems—In every ship of Class II, VII, VIIA and VIII in which cooling water services are essential for the running of the propelling machinery there shall be at least two means of operating such water services.

26. Oil and Fuel Installations—(1) Any oil fuel used in boilers or machinery shall have a flash point of not less than 60°C, except in the case of the following:

(a) in emergency generators oil fuel with a flashpoint of not less than 43°C may be used;

(b) subject to such additional precautions as the Chief Surveyor may consider necessary and on condition that the ambient temperature of the space in which such oil fuel is stored or used shall not be allowed to rise to within 10°C below the flashpoint of the oil fuel, the Chief Surveyor may permit the general use of oil fuel having a flashpoint of less than 60°C but not less than 43°C; and

(c) subject to such additional precautions as the Chief Surveyor may consider necessary the Chief Surveyor may permit any ship of Classes IV or V which do not carry more than 12 passengers and any ship of Class IX which does not proceed beyond extended river limits to use oil or petroleum fuel having a flash point of less than 43°C in internal combustion type machinery.

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

(2) The arrangements for the storage, distribution and utilisation of the oil fuel shall be such as to ensure the safety of the ship and persons on board and shall at least comply with the following provisions:

(a) As far as practicable, parts of the oil fuel system containing heated oil under pressure exceeding 180kPa shall not be placed in a concealed position such that defects and leakage cannot readily be observed. The machinery spaces in way of such parts of the oil fuel system shall be adequately illuminated.

(b) The ventilation of machinery spaces shall be sufficient under all normal conditions to prevent accumulation of oil vapour.

(c) No oil fuel tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

(d) Safe and efficient means of ascertaining the amount of oil fuel contained in any oil fuel tank shall be provided. Sounding pipes shall not terminate in any space where the risk of ignition of spillage from the sounding pipe might arise. In particular, they shall not terminate in passenger or crew spaces. The use of oil level gauges with flat glasses and self-closing valves between the gauges and oil tanks is acceptable in ships of Class IV, V, VI and IX. Other means of ascertaining the amount of oil fuel contained in any oil fuel tank may be permitted by the Chief Surveyor having regard to the ships service, fuel carried, and location of the tank.

(e) Provision shall be made to prevent overpressure in any oil tank or in any part of the oil fuel system, including the filling pipes. Any relief valves and air or overflow pipes shall discharge to a position which, in the opinion of the Chief Surveyor is safe.

(f) Oil fuel pipes and their valves and fittings shall be of steel or other approved material, except that restricted use of flexible pipes shall be permissible in positions where the Chief Surveyor is satisfied that they are necessary. Such flexible pipes and end attachments shall be of approved fire-resisting

materials of adequate strength and shall be constructed to the satisfaction of the Chief Surveyor.

(g) Oil fuel shall not be carried in forepeak tanks.

27. Lubricating and Other Oil Systems—(1) The arrangements for the storage, distribution and utilisation of oil used in pressure lubrication systems shall be such as to ensure the safety of the ship and persons on board, and such arrangements in machinery spaces shall wherever practical comply with the provisions of Clause 26, subclause (2)(a), (c), (d), (e) and (f) of this Code except that this does not preclude the use of sight flow glasses in lubricating systems provided that they are shown by test to have a suitable degree of fire resistance.

(2) The arrangements for the storage, distribution and utilisation of other flammable oils employed under pressure in power transmission systems, control and activating systems and heating systems shall be such as to ensure the safety of the ship and persons on board. In locations where means of ignition are present, such arrangements shall at least comply with the provisions of Clause 26, sub-clause (2)(c) and (d) of this Code and with the provisions of Clause 26, sub-clause (2)(e) and (f) of this Code in respect of strength and construction.

(3) Lubricating oil and other flammable oils shall not be carried in fore peak tanks.

28. Ventilation Systems in Machinery Spaces—Machinery spaces shall be adequately ventilated so as to ensure that when machinery or boilers therein are operating at full power in all weather conditions including heavy weather, an adequate supply of air is maintained to the spaces for the safety and comfort of any personnel and the operation of the machinery.

29. Communication between Navigating Bridge and Machinery Space—Every ship operating with a manned main machinery space shall be provided with at least two independent means for communicating orders from the navigating bridge to the position in the machinery space or in the control room from which the engines are normally controlled: one of these shall be an engine-room telegraph which provides visual indication of the orders and responses both in the machinery space and on the navigating bridge.

30. Steering Gear—(1) Unless expressly provided otherwise, every ship shall be provided with a main steering gear and an auxiliary steering gear to the satisfaction of the Chief Surveyor. The main steering gear and the auxiliary steering gear shall be so arranged that the failure of one of them will not render the other one inoperative.

(2) The main steering gear and rudder stock shall be:

(a) of adequate strength and capable of steering the ship at maximum ahead service speed which shall be demonstrated;

(b) capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed.

(c) operated by power where necessary to meet the requirements of sub-clause (2)(b) of this clause and in any case when the rudder stock is over 120mm diameter in way of the tiller; and

(d) so designed that they will not be damaged at maximum astern speed; however, this design requirement need not be proved by trials at maximum astern speed and maximum rudder angle.

(3) The auxiliary steering gear shall be:

(a) of adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency;

(b) operated by power where the rudder stock is over 230mm diameter in way of the tiller.

(4) In ships of less than 20m in length, the provision of a hand

tiller on or near the rudder stock shall meet the requirements for auxiliary steering.

(5) In every ship fitted with a power-operated steering gear the position of the rudder shall be indicated at the principal steering position.

31. Protection Against Noise—(1) In every ship with a manned main machinery space, measures shall be taken to reduce noise levels in that space as far as is reasonable and practicable. On completion of such a ship, noise levels in that machinery space shall be measured in a manner approved by the Chief Surveyor.

(2) Any machinery space in which the noise level exceeds 90 dB(A) and which is required to be manned shall be provided with a designated refuge from noise.

(3) Ear protectors shall be provided for use in manned main machinery spaces.

32. Spare Gear and Tools—(1) Every ship shall be provided with a sufficient quantity of spare gear, having regard to the intended service of the ship, to enable repairs or renewals which are essential for the safety of the ship and of persons on board and which can reasonably be effected while the ship is at sea to be carried out, and such tools as are necessary for fitting that spare gear shall be provided.

PART VI

ELECTRICAL INSTALLATION

33. Application—(1) These requirements apply to the following recognised electrical supply systems:

(a) Extra low voltage: Installations which do not exceed 32 volts A.C. or 50 volts D.C.

(b) Low voltage: A.C. installations which exceed 32 volts, but do not exceed 250 volts. D.C. installations which exceed 50 volts, but do not exceed 250 volts.

(2) Requirements for any of the above systems may also be taken from the "Regulations for the Electrical and Electronic Equipment of Ships" issued by the Institute of Electrical Engineers or the equivalent provisions of an approved classification society.

34. General—(1) Materials, appliances, fittings, equipment, cables and other accessories, shall comply with such standards which are approved by the Chief Surveyor.

(2) The electrical system shall be permanently installed, and in such a manner as to provide maximum protection against shock for persons on the ship.

(3) All conductors, switchgear, and accessories shall be of such size as to be capable of carrying, without their respective ratings being exceeded, the maximum current which can normally flow through them.

(4) Electrical equipment, switchboards, and cables shall be so selected and located that they are unaffected by sea, air, water, steam, oil or fumes to which they are likely to be exposed. They shall be so installed that they will be clear of boilers, steam or oil pipes, settling tanks and diesel engine exhaust pipes or manifolds.

(5) The installation of electrical wiring and equipment should be carried out by competent persons experienced in marine electrical work.

(6) Electrical apparatus, batteries, and other sources of power shall not be placed in positions where they will affect the magnetic compass.

(7) Cables shall be kept as high as possible above the bilges and joints in cables shall only be made in suitable junction boxes.

(8) Lighting switches shall be placed in accessible positions near to the entrance of each compartment.

(9) Separate circuits shall be provided for essential services, such as wheelhouse lights, deck lights, searchlights, horn, and radiotelephone. Two separate circuits are required for engine-room lights and each navigation light is to be on a separate circuit.

(10) Screws or nuts securing current-carrying parts shall be effectively locked so that they cannot work loose by vibration. Machines and apparatus shall be unaffected by vibration and shock likely to arise under normal service.

35. Electrical Systems—(1) The following A.C. systems are approved and the minimum main and sub-board switchgear to control each installation is set out as follows:

System of Supply	Circuit Breaker or Switch Required	Overload Trip Coils or Fuse Links Required
(a) 3-phase, 3-wire insulated	Three-pole	In each conductor
(b) 3-phase, 3-wire insulated, with neutral earthed	Three-pole	In each phase conductor
(c) 3-phase, 4-wire with neutral earthed	Three-pole	In each phase conductor
(d) Single phase, 2-wire insulated	Two-pole	In each conductor
(e) Single phase, with neutral earthed	One-pole	In non-earthed conductor

(2) The normal frequency employed on A.C. systems shall be 50 Hz and the preferred system for a three-phase installation is subclause (1)(a) of this clause and for a single-phase installation is subclause (1)(d) of this clause.

(3) The two-wire insulated system is the only D.C. system approved for low—and medium-voltage installations and either a two-pole circuit breaker with overload release in each pole, or a fuse in each pole and a two-pole linked switch are required to control such an installation.

(4) For extra-low voltage installations the system can be either, two-wire insulated with control as in (3) above, or can be insulated in one pole only, with the other pole earthed. A single-pole circuit breaker fitted with an overload release, or a fuse and single-pole switch are required to control such an installation.

(5) In all systems, whether earthed or insulated the following is to apply:

(a) The phase and neutral, or positive and negative supplying all appliances and outlets, shall be insulated from earth.

(b) The neutrals or negatives of an earthed A.C. or D.C. system respectively shall be brought back to a common bar on the main switchboard.

(c) From this common bar a suitably sized conductor shall be run to the common earthing point on the ship's hull.

(6) Voltages between conductors shall not exceed the maximum given below:

Application	Standard Voltage	Maximum Voltage
(a) Power, heating, and cooking equipment securely fixed in a permanent position	3 phase	230 250
		400 440
	Single phase	230 250
	D.C.	24 -
		110 -
		220 250
(b) Fixed lighting	Single phase	110 -
		230 250
	D.C.	24 -
		110 -
		220 250
(c) Socket outlets for supplying equipment through flexible cables for general purposes	Single phase	110 -
		230 250
	D.C.	24 -
		110 -
		220 250
(d) Socket outlets for use where precautions against shock are to be taken	D.C.	12 -
		24 -
		110 -
		220 250
		230 250
(i) Where an isolating transformer is used supplying one socket only	Single phase	55 -
		110 -
(ii) Supplied without the above restriction	Single phase	24 -
		48 -
		55 55
(e) Socket outlets rated at more than 15 amps. Intended for apparatus the connection of which incorporates an earth continuity conductor	3 phase	400 440
(d) Internal communications	Single phase	12 -
		24 -
		115 -
		230 250
		220 250
	D.C.	6 -
		12 -
		24 -
		48 -
		110 -
		220 250

36. Emergency Source of Electrical Power: Ships of Class II—

(1) In every ship of Class II there shall be provided in a position outside the machinery space a self contained emergency source of electric power. The location of this self-contained emergency source in relation to the main source or sources of electric power shall be such as to ensure that a fire or other casualty to the machinery space will not interfere with the supply or distribution of emergency power.

(2) The emergency source of power required by subclause (1) of this clause shall be capable of operating simultaneously for a period of 12 hours the following services:

- The ship's bilge pump if electrically operated,
- The ship's emergency lighting,
- The ship's navigation lights,
- The ship's communication equipment, and
- The ship's fire pump if electrically operated.

(3) The emergency source of electric power shall be either a battery capable of complying with sub-clause (2) of this clause without being re-charged or suffering an excessive voltage drop, or a generator driven by internal combustion type machinery with an independent fuel supply and with efficient starting arrangements, and the fuel provided for such machinery shall have a flashpoint of not less than 43°C.

37. Switchboards—(1) For voltage between poles or to earth exceeding extra-low voltage, switchboards shall be either of the dead front metal-clad type or, where the equipment is mounted on a panel of insulating material, the switchboard shall be totally enclosed by a metal surround having a hinged front cover.

(2) For voltages between poles or to earth above extra-low voltage, the following shall apply on D.C. systems:

(a) For D.C. generators not operated in parallel, one voltmeter and one ammeter shall be provided for each generator.

(b) For parallel operation, at least one ammeter shall be provided for each generator, and one busbar voltmeter,

together with either one voltmeter for each generator or one voltmeter with a changeover switch for measuring each generator voltage.

(c) The upper limit of each scale of every voltmeter shall be approximately 120 percent of the normal voltage of the circuit and the scale shall be provided with a red line to indicate normal voltage. The upper limit of the scale of every ammeter and wattmeter shall be not less than 130 percent of the normal rating of the circuit in which it is to be installed. The scale shall be provided with a red line indicating the normal full load.

(d) Ammeters for use with generators which may operate in parallel shall be capable of indicating reverse current up to 15 percent of the rated full load current of the generator.

(3) For voltages between phases or to earth above extra-low voltage, the following shall apply on A.C. systems:

(a) For A.C. generators not operated in parallel, each generator shall be provided with a voltmeter and frequency meter, and an ammeter in each phase conductor, or one ammeter and a selector switch designed to permit the reading of current in one phase.

(b) For A.C. generators operated in parallel, each generator shall be provided with an ammeter in each phase conductor, or an ammeter and a selector switch designed to permit the reading of the current in each phase; for paralleling purposes, two voltmeters, two frequency meters, and a synchronising device, the last-named being controlled by a switch or plug and comprising a synchronoscope and synchronising lamps.

A plug or linked double-pole, multi-way switch, shall be provided to enable one voltmeter and frequency meter to be connected to one phase of any one generator before the machine is connected to the busbars; and the other voltmeter and frequency meter shall be permanently connected to one phase of the busbars. The connections shall be made to the corresponding phase of each generator.

(c) The upper limit of the scale of every voltmeter shall be approximately 120 percent of the normal voltage of the circuit and the scale shall be provided with a red line to indicate normal voltage.

The upper limit of the scale of every ammeter shall be not less than 130 percent of the rating of the circuit in which it is installed. The scale shall be provided with a red line indicating the normal full load.

(4) For voltages between poles or to earth below extra-low voltage, the main switchboard shall have suitable control equipment for the generator and battery including an ammeter to show charge and discharge current, a voltmeter, isolating switches and fuses for generator and battery, and a voltage regulator.

(5) Every outgoing subcircuit from a main switchboard or a distribution switchboard shall be controlled and protected by a switch and fuse or a circuit breaker in each phase or insulated pole.

(6) Every insulated system of supply, whether primary or secondary, shall be provided with means to indicate the state of the insulation from earth.

(7) All switchboards shall be of substantial and durable construction and any insulating materials used in the construction shall be mechanically strong, flame-retardant and moisture resistant.

(8) All switchboards, instruments and all apparatus controlling circuits shall be provided with labels of durable, flame-retardant materials bearing clear and indelible indications.

(9) Overload protection shall be provided on at least one line of D.C. system or a single phase A.C. system and on all three phases of a 3 phase system.

(10) In every distribution system which is designed to operate with an earth connection, no fuse, non-linked switch or non-linked circuit breaker shall be inserted in an earthed conductor.

38. Batteries—(1) Batteries shall be of a type suitable for marine use and shall be accessible for servicing in their normal position.

(2) Batteries shall be located as high above the bilges as practicable and shall be well secured against movement.

(3) Battery compartments or boxes shall be well ventilated and switches, fuses, or other electrical equipment liable to cause an arc shall not be fitted inside any battery box.

(4) Batteries shall be of sufficient capacity for their intended service and in particular the main engine starting battery shall be of sufficient capacity for not less than six consecutive starts of the main engine. It is recommended that the engine starting battery be used for that purpose only.

(5) Where batteries are located in the engine room they shall be protected by an overhead lid or canopy to prevent tools or other objects falling across the battery terminals.

(6) The interior of battery boxes shall be protected by acid-resisting paint or bitumastic or lead lining.

(7) Batteries for radiotelephone installations shall be installed in accordance with the requirements of the Shipping (Radio) Regulations 1989.

(8) Batteries shall not be tapped for voltages other than the total voltage of all the cells comprising the battery.

39. Cables and their Installation—(1) The rated voltage of any cable shall not be less than the maximum voltage of the circuit. On 3 phase A.C. systems operating at a voltage not exceeding 400 volts, which have the neutral point permanently and effectively earthed, 250 volt cables are deemed to be suitable.

(2)(a) In machinery spaces and refrigerated spaces, or where they are exposed to the weather, or to the action of sea water, fixed cables shall, unless run in steel or copper conduit or steel pipe, be either:

- (i) lead-alloy sheathed, with or without braid or armour; or
- (ii) mineral insulated, copper sheathed; or
- (iii) Polychloroprene sheathed, with or without braid; or
- (iv) Butyl rubber insulated with or without braid.

(b) In galleys, bathrooms, laundries, and toilets, or where they are exposed to harmful gas or vapour, fixed cables shall, unless run in conduit or steel pipe, be either one of the types described in subclause (2)(a) of this clause or PVC insulated PVC sheathed.

(c) Cables having a sheath or covering of PVC shall not be used in refrigerated spaces or in any situation where it is necessary for them to pass through watertight bulkhead glands or deck tubes.

(3) Flexible cables and flexible cords shall not be used for fixed wiring.

(4) The cross-sectional area of conductors shall be sufficient to ensure that at no point in the installation shall the voltage between conductors comprising a circuit, fall more than 6 percent below the nominal voltage, when the said conductors are carrying the maximum current under their normal conditions of service, due allowance being made, where necessary, to ensure satisfactory starting of motors.

(5) Cables shall not be installed in, or be in direct contact with, oil fuel tanks and unless adequately protected, cables shall not be laid under machines or floor plates.

(6) All cables passing through the deck or through watertight bulkheads shall be provided with deck tubes or watertight glands as appropriate.

(7) All wiring, other than mineral insulated copper sheathed cable, shall be stranded cable, of suitable current carrying capacity.

(8) Metal trays used for supporting cables, unless of corrosion-

resistant material, shall be galvanised or provided with an equally effective protective coating applied before erection.

(9) Metal conduits and pipes shall be earthed and shall be electrically and mechanically continuous across all joints.

(10) Conduits, cables, and pipes shall be securely fixed and saddles and fixings for securing conduits, cables, or pipes shall be of non-ferrous material or have a corrosion-resistant finish. Metal staples shall not be used for fixing wiring or cables.

(11) Any type of cable may be installed in non-metallic conduits in accordance with the previous requirements other than subclause (9) of this clause. and in accordance with the following additional requirements:

(a) The conduits shall be of non-flammable, non-absorbent damp-proof material.

(b) The conduits shall not be installed on open decks, or in refrigerated spaces or other locations where they would be liable to exposure and extremes of temperature.

(c) The conduits shall be mechanically continuous across all joints and shall be securely fixed in position.

(d) In situations where the conduits are liable to mechanical damage they shall be provided with mechanical protection.

(12) Cables or conduits fixed within a refrigerated space shall not be embedded in the walls or lagging, but shall be in full view throughout their length. The cables shall be carried on galvanised, perforated trays, which shall be so installed as to leave a space behind the back of the tray and the face of the chamber. As an alternative, cables may be supported on cleats. Conduits may be saddled directly to the face of the chamber and like the saddles and fixing screws are to be of corrosion-resistant material.

(13) Cables and conduits entering a refrigerated space shall pass directly through the walls or lagging of the chamber. The cables shall be protected by continuous tube flanged at each end, or alternatively the cables, may, if desired, be passed through holes bored in solid door frames. Such holes whether for cables or conduits are to be sealed at both ends with a suitable compound.

(14) Where cables are required to pass a refrigerator hold and no alternative is practicable, the cables may be installed behind the insulation, provided they are enclosed in a steel conduit of ample size. Where such conduits pass through watertight bulkheads, the conduits and cables shall be effectively sealed.

40. Generators, Motors and Control Gear—(1) Electric generators, motors, and control gear shall be located in dry, accessible, and well-ventilated positions and shall preferably be of the totally enclosed type.

(2) Every horizontal rotating machine shall:

(a) where practicable be installed in the fore and aft direction.

(b) Where a machine is to be installed athwartships, it shall be ensured that the design of the bearings and the arrangement of the lubrication are satisfactory to withstand the rolling encountered in heavy weather.

(3) Generators and motors which are integral parts of the main engines shall be mounted above the crankshaft centre line.

(4) Auxiliary generators and motors shall be mounted as high as practicable above the bilges. Belt and chain drives for generators and motors shall be properly guarded.

(5) Every electric motor shall be provided with efficient means of starting and stopping, the latter so placed as to be easily operated by the person controlling the motor. Every electric motor having a rating exceeding 0.5 kW shall be provided with the following control apparatus:

(a) Means to prevent automatic restarting after a stoppage due to a drop in voltage or complete failure of supply, where unexpected starting of the motor might be undesirable.

(b) Efficient means of isolation shall be provided, suitably

placed, and so connected that all voltage may thereby be cut off from the motor and all apparatus including any automatic circuit-breaker used therewith.

(c) The means of isolation referred to in subclause 5(b) of this clause may be the fuses in each live pole or phase, provided they are so arranged that they can be readily and safely removed.

(d) Means for the automatic disconnecting of the supply in the event of current becoming excessive owing to mechanical overloading of the motor.

(e) When fuses are employed to protect polyphase motor circuits, means shall be provided to open the circuit automatically if the current in any phase becomes excessive owing to the interruption of only one phase by the blowing of a fuse.

(6) Emergency-stop control for motor-driven fuel oil pressure pumps and power ventilation systems shall be provided at a readily accessible point outside the compartment in which the pump or fan is situated. This requirement does not apply to small fans connected to the lighting circuits.

41. Heating and Cooking Appliances—(1) The heating elements of heating appliances shall be suitably guarded. The protecting guards shall be strong enough to resist being forced against any current-carrying part. The openings shall be of small size to prevent the heating elements from being short circuited or damaged by accident.

(2) Every heating and cooking appliance, whether portable or fixed, shall be controlled locally by a fixed switch, and where a socket outlet is provided it shall be connected between the switch and the appliance.

(3) All portable heating and cooking appliances shall be of such shape or so weighted that they cannot easily be overturned and suitable stowage positions shall be provided for them.

(4) Heaters shall be so constructed, installed, and protected that clothing, bedding, curtains, or other flammable material cannot be placed over them in such a manner as to cause scorching or risk of fire.

(5) Electric space heaters shall be fixed in position and shall be so constructed as to reduce the risk of fire to a minimum. Space heaters in cabins, lockers, and similar enclosed spaces shall be of the convector type.

(6) Appliances shall be so constructed and mounted that there will be no excessive heating of adjacent decks or bulkheads.

42. Accessories—(1) Where differing distribution systems supplying socket outlets are in use, the socket outlets and plugs shall be of such design that an incorrect connection between differing systems cannot be made.

(2) Every socket outlet of rating exceeding 15 amperes shall be provided with a switch so interlocked that the plug cannot be inserted or withdrawn when the switch is in the "ON" position.

(3) Socket outlets shall not be fitted in bathrooms, showers, lavatories, and similar places.

(4) Socket outlets for supplying electric dry-shavers shall be as remote as practicable from washbasins, unless in the case of A.C. supplies they comply with the relevant New Zealand Standard.

(5) On weatherdecks, in engine rooms, and wherever they are exposed to drip or condensed moisture, socket outlets and plugs shall be weatherproof.

(6) Weatherproof socket outlets and plugs shall be of robust construction and shall be provided with effective means to maintain the weatherproof properties of the socket outlet after removal of the plug, e.g., a loose cover anchored by means of a chain. When the plug is inserted in the socket outlet, the combined fitting and interlocking switch, if any, shall also be waterproof.

(7) In wet situations such as galleys, laundries, and bathrooms, switches shall be of watertight construction.

43. Lightning Protection—(1) If there is a metal to metal connection between the metal hull and a metal mast or other metallic superstructure, no further protection against lightning is necessary.

(2) In the event of a wooden mast being fitted to a metal hull a lightning conductor shall be fitted to the mast. The lightning conductor shall consist of a copper tape or wire of not less than 100mm² cross section connected to a 12mm diameter copper spike affixed to and projecting at least 150mm above the top of the mast.

The lightning conductor shall be run as straight as possible and be connected to the metal hull or metal superstructure.

(3) A lightning conductor shall be fitted to each mast of a non-metal ship:

(a) The lightning conductor shall consist of a copper tape or wire of not less than 100mm² cross section connected to a 12mm diameter copper spike affixed to and projecting at least 150mm above the top of the mast.

(b) The lightning conductor shall be run as straight as possible and be connected to a copper earth plate not less than 1860 cm² in area and 3mm thickness attached to the outside of the hull well below the waterline.

(c) Where a steel mast is fitted a lightning conductor is not necessary provided the base of the mast is well bonded to the earth plate referred to above.

44. Earthing

(1) On metal vessels the enclosures and frames of all major electrical equipment shall be permanently earthed to the hull of the vessel by the mounting bolts or other means. The term "earthed" means that a normally non-current carrying conductor is used to connect the non-current carrying metal enclosures or frames of the electrical equipment to a metal area which is electrically continuous with the wetted surface of the hull (for example, a metal enclosure would be considered as earthed if it was attached to a metal bulkhead by metal bolts, and if the bulkhead was welded or bolted to the metal hull).

(2) The non-current carrying metal parts of all major electrical equipment, the metal sheaths of all cables, and any isolated metallic masses (e.g., fuel tanks, main and auxiliary engines, etc) shall be effectively and permanently connected to a common earth in non-metal ships.

(3) This common earth shall consist of a copper strip or wire at least 14.5mm² cross sectional area running fore and aft in the vessel and connected to an earth plate on the hull.

45. Shore Power—(1) Where arrangements are made for the supply of electricity from an external source on shore or elsewhere, a suitable connection box shall be installed in a position on the vessel suitable for the convenient reception of flexible cables from the external source.

(2) Means shall be provided to disconnect simultaneously all current-carrying conductors from ashore as close to the boat's shore-power disconnect plug as possible.

(3) For a system that is supplied from both ashore and by means of an onboard generator, a 3-position switch (2-position and on-off) totally enclosed shall be provided, so that only one power source can be used at one time.

(4) For shore supplies with earthed neutral, an earth terminal shall be provided for connecting the hull to the shore earth.

(5) The shore connection shall be provided with an indicator at the main switchboard, in order to show when the cable is energised.

(6) Means shall be provided for checking, where necessary, the polarity (for D.C.) or the phase sequence (for 3 phase A.C.) of the incoming supply, in relation to the ship's system.

(7) At the connection box a notice shall be provided giving full information on the system of supply and normal voltage (and frequency if A.C.) of the ship's system, and the procedure for carrying out the connection.

46. Testing of a Completed Installation—(1) Before a new installation, or alteration of, or additions to, an existing installation are put into service, the tests specified in subclause (4) of this clause shall be made.

(2) The voltage used for insulation resistance tests shall be a unidirectional voltage, not less than twice that which will normally be applied to the installation, except that it need not exceed 500 volts for medium-voltage circuits.

(3) The inspection and testing of the installation are to be carried out by, or under the direction of, the electrician in charge of the work. The inspection and testing shall be to the satisfaction of a surveyor and shall be carried out in an orderly sequence as follows:

- (a) Visual inspection;
- (b) Continuity of all conductors;
- (c) Insulation resistance tests;
- (d) Verification of polarity;
- (e) Earthing.

(4) An insulation resistance test shall be made between earth and all conductors of the insulation, alteration, or addition as appropriate, connected together. Apparatus may, if desired, be disconnected from circuits during the test and be tested separately.

(5) The insulation resistance test required in subclause (4) of this clause shall be deemed to be satisfied if the insulation resistance is not less than the minimum set out below for the respective parts of the installation:

<i>Wiring or Apparatus Under Test</i>	<i>Minimum Insulation Resistance to Earth</i>	
Complete installation	1 megohm	
Alteration to an installation and/or Addition to an installation	$\frac{50}{\text{number of points}}$	megohms, but not less than one megohm
Apparatus disconnected from circuits	0.5 megohm	

(6) A written report tabulating results of all inspections and tests as listed in subclauses (3)(a) to (e) of this clause is to be prepared and signed by the electrician responsible for the installation and two copies are to be forwarded to a Surveyor of Ships.

PART VII

FIRE PROTECTION

47. General—(1) The number of openings in the bulkheads and decks shall be as few as reasonably practicable and fitted with closing devices which provide protection in resisting fire at least equivalent to the surrounding structure.

(2) Windows and skylights to machinery spaces shall be as follows:

(a) Where skylights are provided, they are to be operable from outside the space. Fitting of windows to these skylights should be discouraged, but where fitted they should be of a non-opening type, with wire-reinforced glass and provided with suitable externally applied steel shutters.

(b) Glass or similar materials shall not be fitted in machinery space boundaries. This does not preclude the use of wire-reinforced glass for skylights and glass in control rooms within the machinery spaces.

(3) Insulating materials in accommodation spaces, service spaces except domestic refrigerating compartments, control stations and machinery spaces shall be non-combustible. The surface of insulation fitted on the internal boundaries of

machinery spaces of Category A shall be impervious to oil or oil vapours.

(4) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing quantities of smoke or toxic gases or vapours and shall not be of a nature to offer an undue fire hazard.

(5) Primary deck coverings within accommodation and service spaces and control stations, shall be of material which will not readily ignite or give rise to toxic or explosive hazards at elevated temperatures.

(6) Pipes conveying oil, other combustible liquids, gases or compressed air should be of steel or be of construction and material acceptable to the Chief Surveyor having regard to the risk of fire. Pipes conveying flammable liquids under pressure in excess of 3000 kPa are to be screened where liquid from a burst or leak may impinge upon a hot surface or its insulation.

(7) In accommodation and service spaces and control stations, pipes penetrating 'A' or 'B' Class divisions shall be of approved materials having regard to the temperature such divisions are required to withstand.

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

(9) In vessels of 24m in length or more machinery driving fuel oil transfer pumps, fuel oil unit pumps and other similar fuel pumps shall be fitted with remote controls situated outside the space concerned so that they can be stopped in the event of a fire arising in the space in which they are located.

(10) All main and auxiliary machinery exhaust pipes are to be kept clear of or well insulated in way of any woodwork or other combustible materials.

(11) Drip trays shall be fitted where necessary to prevent oil leaking into bilges.

(12) All waste receptacles shall be constructed of non-combustible materials with no openings in the sides and bottom.

(13) Cellulose-nitrate-based film shall not be used in cinematograph installations.

48. Structural Requirements for Ships of Less than 24m Length—(1) In every ship of Class II, III, VII, VIIA and VIII constructed of non-combustible materials, bulkheads separating machinery spaces from accommodation and other spaces are to be constructed of non-combustible materials or insulated to the satisfaction of the Chief Surveyor.

(2) In ships constructed of fibre reinforced plastic, fuel tanks moulded integral with the hull and located in the machinery spaces are to have their external surfaces within the machinery spaces laminated with an approved resin of reduced fire hazard or the laminate reinforcement is to be a closely woven glass fabric. Alternatively the surfaces may be coated with an approved fire retardant paint or protected by non-combustible materials.

49. Structural Requirements for Ships 24m Length and Over and of Class II, III, VII, VIIA and VIII.

(1) The requirements of subclauses (2) to (15) of this clause apply to ships of Class II, III, VII, VIIA and VIII.

(2) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of non-combustible materials unless the requirements of sub-clause (3) of this clause and any additional fire extinguishing requirements of the Shipping (Fire Appliances) Regulations 1989 are complied with.

(3) In vessels, the hull of which is constructed of non-combustible materials, the decks and bulkheads separating machinery spaces of Category A from accommodation spaces, service spaces or control stations shall be constructed to 'A-60' Class standard where the machinery space of Category A is

not provided with a fixed fire-extinguishing system and to 'A-30' Class standard where such a system is fitted. Decks and bulkheads separating other machinery spaces from accommodation, service spaces and control stations shall be constructed to 'A-0' Class standard. Decks and bulkheads separating control stations from accommodation and service spaces shall be constructed to 'A' Class standard, insulated to the satisfaction of the Chief Surveyor, except that the fitting of 'B-15' Class divisions for separating such spaces as the master's cabin from the wheelhouse may be permitted.

(4) In vessels, the hull of which is constructed of combustible materials, the decks and bulkheads separating machinery spaces from accommodation spaces, service spaces or control stations shall be constructed to 'F' Class or 'B-15' Class standard. In addition, machinery space boundaries shall as far as practicable prevent the passage of smoke. Decks and bulkheads separating control stations from accommodation and service spaces shall be constructed to 'F' Class standard.

(5) In ships, the hull of which is constructed of non-combustible materials, bulkheads of corridors serving accommodation spaces, service spaces and control stations shall be of 'B-15' Class divisions.

(6) In ships, the hull of which is constructed of combustible materials, bulkheads of corridors serving accommodation spaces, service spaces and control stations, shall be of 'F' Class divisions.

(7) Any bulkhead required by sub-clause (2) or (3) shall extend from deck to deck unless a continuous ceiling of the same Class as the bulkhead is fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling.

(8) Interior stairways serving accommodation spaces, service spaces or control stations shall be of steel or other equivalent material. Such stairways shall be within enclosures constructed of 'F' Class divisions in vessels the hull of which is constructed of combustible materials, or 'B-15' Class divisions in vessels the hull of which is constructed of non-combustible materials, provided that where a stairway penetrates only one deck it need be enclosed at one level only.

(9) Doors and other closures of openings in bulkheads and decks referred to above, doors fitted to stairway enclosures referred to above and doors fitted in engine and boiler casings, shall be as far as practicable equivalent in resisting fire to the divisions in which they are fitted. Doors to machinery in spaces of Category A shall be self-closing.

(10) Lift trunks which pass through the accommodation and service spaces shall be constructed of steel or equivalent material and shall be provided with means of closing which will permit control of draught and smoke.

(11) In ships, the hull of which is constructed of combustible materials, the boundary bulkheads and decks of spaces containing any emergency source of power and bulkheads and decks between galleys, paint rooms, lamp rooms or any store-rooms which contain appreciable quantities of highly flammable materials, and accommodation spaces, service spaces or control stations shall be constructed of 'F' Class or 'B-15' Class divisions.

(12) In ships, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in subclause (11) of this clause shall be of 'A' Class divisions insulated to the satisfaction of the Chief Surveyor, having in mind the risk of fire, except that the Chief Surveyor may accept 'B-15' Class divisions between a galley and accommodation spaces, service spaces and control stations when the galley contains electrically heated furnaces, electrically heated hot water appliances or other electrically heated appliances only.

(13) Where bulkheads or decks required by sub-clauses (3), (4), (5), (6), (7), (11), and (12) of this clause to be of 'A' Class, 'B' Class or 'F' Class divisions, are penetrated for the

passage of electrical cables, pipes, trunks, ducts, and similar devices, arrangements shall be made to ensure that the fire integrity of the divisions is not impaired.

(14) Air spaces enclosed behind ceilings, panellings or linings in accommodation spaces, service spaces and control stations shall be divided by close-fitting draught stops spaced not more than 7 metres apart.

(15) Exposed surfaces within accommodation spaces, service spaces, control stations, corridor and stairway enclosures and the concealed surfaces behind bulkheads, ceilings, panellings and linings in accommodation spaces, service spaces, and control stations shall have low flame-spread characteristics.

50. Structural Requirements for Ships of 24m in Length and Over and of Class IV, V, VI and IX.

(1) The requirements of subclauses (2) to (10) of this clause apply to ships of Class IV, V, VI and IX.

(2) In ships, the hull of which is constructed of non-combustible materials, the decks and bulkheads separating machinery spaces of Category A from accommodation spaces service spaces or control stations shall be constructed to 'A-60' Class standard where the machinery space of Category A is not provided with a fixed fire-extinguishing system and to 'A-30' Class standard where such a system is fitted. Decks and bulkheads separating other machinery spaces from accommodation, service spaces and control stations shall be constructed to 'A-0' Class standard.

(3) In ships, the hull of which is constructed of combustible materials, the decks and bulkheads separating machinery spaces from accommodation spaces, service spaces or control stations shall be constructed to 'F' Class or 'B-15' Class standard. In addition, machinery space boundaries shall as far as practicable prevent the passage of smoke.

(4) Any bulkhead required by sub-clause (2) or (3) of this clause shall extend from deck to deck unless a continuous ceiling of the same Class as the bulkhead is fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling.

(5) Ladders or stairways within machinery spaces shall be of steel or equivalent material.

(6) Doors and other closures of openings in bulkheads and decks referred to above, shall be as far as practicable equivalent in resisting fire to the divisions in which they are fitted. Doors to machinery in spaces of Category A shall be self-closing.

(7) In ships, the hull of which is constructed of combustible materials, the bulkheads and decks between galleys, paint rooms, lamp rooms or any store-rooms which contain appreciable quantities of highly flammable materials, and accommodation spaces, service spaces or control stations shall be constructed of 'F' Class or 'B-15' Class divisions.

(8) In ships, the hull of which is constructed of non-combustible materials, the decks and bulkheads referred to in sub-clause (7) of this clause shall be of 'A' Class divisions insulated to the satisfaction of the Chief Surveyor, having in mind the risk of fire, except that the Chief Surveyor may accept 'B-15' Class divisions between a galley and accommodation spaces, service spaces and control stations when the galley contains electrically heated furnaces, electrically heated hot water appliances or other electrically heated appliances only.

(9) Where bulkheads or decks required by subclauses (2), (3), (4), (7), and (8) of this clause to be of 'A' Class, 'B' Class or 'F' Class divisions, are penetrated for the passage of electrical cables, pipes, trunks, ducts, and similar devices, arrangements shall be made to ensure that the fire integrity of the divisions is not impaired.

(10) Exposed surfaces within accommodation spaces, service spaces control stations, corridor and stairway enclosures and the concealed surfaces behind bulkheads, ceilings, panellings

and linings in accommodation spaces, service spaces, and control stations shall have low flame-spread characteristics.

51. Spaces Containing Engines Using a Fuel with a Flashpoint Below 60°C—(1) In small ships where the engine is 'boxed-in' the casing should be of steel or GRP but, if of wood, should be lined internally with fire-resistant material covered with metal sheathing not less than 22 SWG thick. The engine box is to be adequately ventilated and the controls for starting and stopping the engine are to be capable of operating without the necessity for opening the box.

(2) Fuel tanks, filling and sounding pipes, vent pipes and fuel supply piping are to comply in full with this code as to materials, construction, workmanship, and in installations where flexible filling pipe sections are necessary and are non-conductors of electricity, the metallic sections of filling pipes separated thereby are to be joined by a conductor for protection against static spark when filling.

52. Heating and Cooking Installations—(1) Electric radiators shall be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiator shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.

(2) Heating by means of open fires shall not be permitted. Heating stoves and other similar appliances shall be firmly secured and adequate protection and insulation against fire shall be provided beneath and around such appliances and in way of their uptakes. Uptakes of stoves which burn solid fuel shall be so arranged and designed as to minimise the possibility of becoming blocked by combustion products and shall have a ready means for cleaning. Dampers for limiting draughts in uptakes shall, when in the closed position, still leave an adequate area open. Spaces in which stoves are installed shall be provided with ventilators of sufficient area to provide adequate combustion-air for the stove. Such ventilators shall have no means of closure and their position shall be such that no closing appliances are required.

(3) Where gaseous fuel is used for domestic purposes, the arrangements, storage, distribution and use of the fuel shall be to the satisfaction of the Chief Surveyor and in accordance with this part of this code.

(4) Open flame gas appliances, except cooking stoves and water heaters, shall not be permitted. All pipes conveying gas from container to stove or water heater shall be of steel or other approved material. Automatic safety gas shut-off devices shall be fitted to operate on loss of pressure in the gas main pipe or flame failure on any appliance.

(5) Continuous burning pilot lights and other continuous flame devices are prohibited.

(6) Compartments containing gas burning appliances or gas cylinders shall be well ventilated. Where mechanical ventilation is not fitted, an effective system of natural ventilation is to be provided which will adequately prevent a dangerous accumulation of gas. The ventilation should provide for extraction of any gas which might leak from the system, as well as provide a fresh-air supply under all weather conditions.

(7) All cooking and heating stoves shall be well secured and installed well clear from all woodwork and other combustible materials and all such adjacent woodwork shall be protected by approved heat resistant material, so arranged as to provide an air space between the material and the woodwork it protects. Such insulating material should be impervious to fat or faced with a material impervious to fat.

(8) Permanent safety guards should be fitted around cooking stoves to retain cooking utensils.

(9) Petrol, white spirit, or liquids having a flashpoint below 23°C are not to be used for cooking.

53. Storage of Gas Cylinders and Dangerous Materials—

(1) Gas cylinders, regulating and relief valves, supply piping

and fittings, are to be of substantial construction suitable for the purpose and the manufacture and materials are to be to standards acceptable to the Chief Surveyor.

(2) Cylinders containing flammable or other dangerous gases and expended cylinders shall be stored properly secured, on open decks and all valves, pressure regulators and pipes leading from such cylinders shall be protected against damage. Cylinders shall be protected against excessive variations in temperature, direct rays of the sun, and accumulation of snow. However, such cylinders may be stored in compartments complying with the requirements outlined in sub-clauses (3), (4) and (5) of this clause.

(3) Spaces containing highly flammable liquids, such as volatile paints, paraffin and benzole, and, where permitted, liquefied gas, shall have direct access from open decks only. Pressure-adjusting devices and relief valves shall exhaust within the compartment. Where boundary bulkheads of such compartments adjoin other enclosed spaces they shall be gastight.

(4) Except as necessary for service within the space, electrical wiring and fittings shall not be permitted within compartments used for the storage of highly flammable liquids or liquefied gases. Where such electrical fittings are installed, they shall be to the satisfaction of the Chief Surveyor for use in a flammable atmosphere. Sources of heat shall be kept clear of such spaces and "No Smoking" and "No Naked Light" notices shall be displayed in a prominent position.

(5) Separate storage shall be provided for each type of compressed gas. Compartments used for the storage of such gases shall not be used for storage of other combustible products nor for tools or objects not part of the gas distribution system. However, the Chief Surveyor may after consideration of the characteristics, volume and intended use of such compressed gases relax this requirement.

(6) The piping between the gas cylinders and any appliances shall be properly protected against damage, heat, and the sun's rays and shall be readily accessible for inspection and maintenance. A non-return valve should be fitted in the supply line near the stop valve for each cylinder where a multi-cylinder supply arrangement is adopted, and such a system should not be put into use with a cylinder removed.

54. Ventilation systems—(1) Means shall be provided to stop fans and close main openings to ventilation systems from outside the space served; other than those installed to provide combustion air for stoves.

(2) Ventilation ducts for machinery spaces of Category A or galleys shall not in general pass through accommodation spaces, service spaces or control stations unless the ducts are constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(3) Ventilation ducts of accommodation spaces, service spaces or control stations shall not in general pass through machinery spaces of Category A or through galleys unless the ducts are constructed of steel or equivalent material and arranged to preserve the integrity of the divisions.

(4) Store-rooms containing appreciable quantities of highly flammable products shall be provided with ventilation arrangements which are separate from other ventilation systems. Ventilation shall be arranged at high and low levels and the inlets and outlets of ventilators shall be positioned in safe areas and fitted with spark arresters.

(5) Ventilation systems serving machinery spaces shall be independent of systems servicing other spaces.

(6) In ships of Class II, III, VII, VIIA and VIII of 24m in length or over ventilation openings may be fitted in the lower parts of the doors in corridor bulkheads but shall not be fitted in doors in bulkheads of stairway enclosures. Ventilation grills are to be of non-combustible material. The total net area of any such openings shall not exceed 0.05m².

(7) In ships of 24m in length or over where trunks or ducts serve spaces on both sides of 'A' Class bulkheads or decks, dampers shall be fitted so as to prevent the spread of fire and smoke between compartments. Manual dampers shall be operable from both sides of the bulkhead or the deck. Where the trunks or ducts with a free cross-sectional area exceeding 0.02m² pass through 'A' Class bulkheads or decks, automatic self-closing dampers shall be fitted. Ducts serving compartments situated only on one side of such bulkheads shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead and comply in that portion of the duct with the following:

(a) for ducts with a free cross-sectional area exceeding 0.02m² the sleeves shall have a thickness of at least 3mm and a length of at least 900mm. When passing through bulkheads this length shall preferably be divided evenly on each side of the bulkhead. Ducts with a free cross-sectional area exceeding 0.02m² shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of the Chief Surveyor; and

(b) ducts with a free cross-sectional area exceeding 0.075m² shall be fitted with fire dampers in addition to the requirements of subclause (7)(a) of this clause. The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by 'A' Class divisions, without serving those spaces, provided those ducts have the same fire integrity as the bulkheads which they penetrate.

(8) Ventilation and exhaust systems for compartments containing engines using fuel with a flashpoint of less than 60°C and their fuel tanks require special attention; for example, blower blades are to be non-sparking with reference to their housings, blowers are to be flame-proof, duct openings are to be located away from sources of vapour ignition, etc. In addition, exhaust blowers are to be interlocked with the engine ignition switch so that blowers are in operation for sufficient time to ensure at least one complete change of air in the engine compartment before ignition is switched on.

PART VIII

MISCELLANEOUS PROVISIONS

55. Ballasting— When ballasting with water is necessary, the water ballast should not in general be carried in tanks intended for oil fuel. In ships in which it is not practicable to avoid putting water in oil fuel tanks, approved oily-water separator equipment shall be fitted, or an approved alternative means shall be provided for disposing of the oily-water ballast.

56. Anchors and Chain Cables— Every ship shall be provided to the satisfaction of the Chief Surveyor with such anchors and chain cables as are sufficient in number, weight and strength, having regard to the size and intended service of the ship.

57. Hawsers and Warps— Every ship shall be provided with such hawsers and warps as are sufficient in number and strength to securely moor the ship, having regard to the size and intended service of the ship.

58. Means of Escape—(1) Every ship, not being an open or partially decked ship of Class IV, V, and IX, shall be provided with such doorways, stairways, ladderways, and other means of escape as will provide readily accessible means of escape for all persons in the ship to an open deck, or where fitted the lifeboat and liferaft embarkation decks. The means of escape shall be so designed and constructed as to be capable of being easily used by the persons for whom they are intended. Subject to subclauses (3) to (5) of this clause, the number and width of

such means of escape shall be sufficient, having regard to the number of persons by whom they may be used.

(2) Every ship of Class IV, V, VI and IX, being an open or partially decked ship, shall be provided with readily accessible means of escape from all enclosed spaces in the ship. Those means of escape shall be sufficient in number and width, having regard to the number of persons who may be in the said spaces.

(3) In every ship of Class II, III, VII, VIIA and VIII there shall be provided below the bulkhead deck at least two means of escape from each accommodation space bounded by main structure bulkheads or from each similarly restricted space or group of spaces, and at least one of the means of escape provided from each such compartment or from each such space or group of spaces shall be independent of watertight doors.

Provided that, having regard to the nature and location of any such space and to the number of persons who might normally be quartered or employed therein, the Chief Surveyor may allow only one means of escape to be provided.

(4) In every ship of Class II, III, VII, VIIA and VIII, two means of escape shall be provided from each main machinery space below the bulkhead deck. One of these means of escape may be a watertight door. If no watertight door is available as a means of escape two widely separated sets of steel ladders shall be fitted which lead to separate doors in the casing or elsewhere giving access to an open deck or where fitted the lifeboat and liferaft embarkation decks.

Provided that, in the case of an unnamed machinery space and having regard to the size of any such space, the Chief Surveyor may allow only one means of escape to be provided.

(5) In every ship there shall be provided two means of escape from each accommodation space where egress from a single means of escape is through any space containing a source of fire.

(6) In every Ship of Class II and III suitable signs shall be displayed in corridors and stairways indicating the direction of escape routes to passenger muster stations. All signs indicating escape routes, means of escape and location of muster stations shall be in a form approved by the Chief Surveyor.

59. Guard Rails, Stanchions, and Bulwarks—(1) Bulwarks or guard rails shall be provided on every exposed deck to which any persons or vehicles may have access.

(2) On every ship of Class II, III, VII, VIIA and VIII such bulwarks or guard rails shall have a minimum height from the deck to the top of the bulwark or rails of 1,000 mm.

(3) On every ship of Class IV, V, VI or IX such bulwarks or guard rails shall have a minimum height from the deck to the top of the bulwark or rails as follows:

Length of ship (metres)	Height of guardrail (mm)
(a) Less than 16	750
(b) 16 to less than 20	850
(c) 20 or more	1,000

(4) Guard Rails shall be so placed, designed and constructed as to prevent any person who may have access to that deck or any vehicle from accidentally falling therefrom. Guard rails shall consist of courses of rail or wires supported by stanchions and the opening between the lowest course of the rails or wires and the deck shall not exceed 230 millimetres in height, and no opening above that course of rails or wires shall exceed 380 millimetres in height.

(5) Any freeing ports greater than 230 millimetres in depth fitted in a bulwark shall be protected by rails or bars so fixed that the distance between the lowest rail or bar and the lower edge of the freeing port does not exceed 230 millimetres.

(6) In every open or partially decked ship of Class IV, V, VI or IX, the height of the top of every coaming, covering board or wash strake above the cockpit sole or floor boards shall be 750

mm in the case of ships of less than 16 metres in length, and 850mm in the case of ships of 16 metres or more in length.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

v2

The Ship Construction and Safety Equipment (Code of Practice for Hydrofoil Ships and Surface Effect Ships) Notice 1989

Pursuant to sections 197, 234, 235 and 505A of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice:

Notice

1. Title and commencement—(1) This notice may be cited as the Ship Construction and Safety Equipment (Code of Practice for Hydrofoil Ships and Surface Effect Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice endorsed—The Code of Safety for Dynamically Supported Craft adopted by Resolution A.373(X) of the International Maritime Organisation dated 14 November 1977, but excluding Chapter 13 of that Code is hereby endorsed for the purposes of:

Regulation 5 of the Shipping (Construction) Regulations 1989.

Regulation 4 of the Shipping (Fire Appliances) Regulations 1989.

Regulation 5 of the Shipping (Life Saving Appliances) Regulations 1989.

3. Application—This Code shall apply to every new hydrofoil ship or surface effect ship which is a passenger ship of Class II, III, IV, V, or VI.

Definition and meanings—

“Hydrofoil ship” means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

“New hydrofoil ship or surface effect ship” means any hydrofoil ship or surface effect ship which comes into operation within New Zealand coastal waters on or after the date of commencement of this notice.

“Surface effect ship” means a ship the weight of which in the normal operating condition is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

Other expressions defined in the Shipping and Seamen Act 1952 have the meaning so defined.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

w1

The Shipping (Electronic Navigational Equipment) Notice 1989

Pursuant to section 234 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Shipping (Electronic Navigational Equipment) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Performance Standards prescribed—The Performance Standards set out in the Schedule to this notice are hereby prescribed for the purposes of the Shipping (Electronic Navigational Equipment) Regulations 1989.

Schedule

Performance Standards for Electronic Navigational Equipment

Part I

General Requirements

1. Introduction—Equipment required by the Shipping (Electronic Navigational Equipment) Regulations shall comply with the following general requirements.

2. Interpretation—Unless the context states otherwise the words and phrases used in this Performance Standard shall have the same meaning as those in The Shipping and Seamen Act 1952 and The Shipping (Electronic Navigational Equipment) Regulations 1989.

3. Operation—(1) All controls shall be of such size and location as to permit normal adjustments to be easily performed and shall be easy to identify.

(2) Adequate illumination shall be provided to enable identification of controls and facilitate reading of displays at all times. Facilities for dimming shall be provided.

4. Power Supply—(1) Equipment shall continue to operate in accordance with the requirements of the relevant recommendations in the presence of variations of the power supply normally to be expected in a vessel.

(2) Means shall be incorporated for the protection of equipment from excessive currents and voltages, transients and accidental reversal of the power supply polarity.

(3) If provision is made for operating equipment from more than one source of electrical energy, arrangements for rapidly changing from one source of supply to the other shall be incorporated.

5. Durability and Resistance to Environmental Conditions—Equipment shall be capable of continuous operation under the conditions of sea states, vibration, humidity and change of temperature likely to be experienced in the vessel in which it is installed.

6. Interference—(1) All reasonable and practicable steps shall be taken to eliminate the causes of, and to suppress, electromagnetic interference between the equipment concerned and other equipment on board.

(2) Mechanical noise from all units shall be so limited as not to prejudice the hearing of sounds on which the safety of the ship might depend.

(3) Each unit of equipment normally to be installed in the vicinity of a standard or a steering magnetic compass shall be clearly marked with the minimum safe distances at which it may be mounted from such compasses.

7. Miscellaneous—(1) Equipment shall be so constructed and installed that it is readily accessible for inspection and maintenance purposes. As far as practicable, access to dangerous voltages within equipment shall be prevented.

(2) Information shall be provided to enable competent members of a ship's staff to operate and maintain equipment efficiently.

(3) Equipment shall be provided with an external indication of manufacture, type and/or number.

(4) Equipment shall be installed in such a manner that it is capable of meeting its performance standards.

Part II

Performance Standards for Echo-sounding Equipment

8. Introduction—(1) The echo-sounding equipment shall provide reliable information on the depth of water under a ship to aid navigation.

(2) The equipment shall comply with the following minimum performance requirements.

9. Range of Depths—Under normal propagation conditions the equipment shall be capable of measuring any clearance under the transducer between 2 metres and 400 metres.

10. Range Scales—(1) The equipment shall provide a minimum of two range scales one of which, the deep range, shall cover the whole range of depth, and the other, the shallow range, one tenth thereof.

(2) The scale of display shall not be smaller than 2.5mm per metre depth on the shallow range scale and 0.25mm per metre depth on the deep range scale.

11. Method of Presentation—(1) The primary presentation shall be a graphical display which provides the immediate depth and a visible record of soundings. Other forms of display may be added but these shall not affect the normal operation of the main display.

(2) The visible record shall, on the deep range scale, show at least 15 minutes of soundings.

(3) A clear indication shall be given when the paper remaining is approximately 10 per cent of the length of the roll.

12. Pulse repetition rate—The pulse repetition rate shall not be slower than 12 pulses per minute.

13. Accuracy of measurement—Based on a sound speed in water of 1500 metres per second, the allowable tolerance on the indicated depth shall be: either

- (a) ± 1 metre on the shallow range scale
 ± 5 metres on the deep range scale

or

(b) ± 5 per cent of the indicated depth, whichever is the greater.

14. Roll and pitch—The performance of the equipment shall be such that it will meet the requirements of this performance standard when the ship is rolling $\pm 10^\circ$ and/or pitching $\pm 5^\circ$.

Part III

Performance Standards for Radio Direction-finding Systems

15. Introduction—(1) The direction-finding equipment shall indicate both bearing and sense of radio transmissions in the frequency bands specified in paragraph 16 of this Recommendation.

(2) In addition, the equipment shall comply with the following minimum performance requirements.

16. Frequency ranges and classes of emission—The equipment shall be capable of receiving signals of classes of emission A1A, A2A, and H2A in the frequency range 255 to 525 kHz and A1A, A2A, H2A, A3E and H3E in the frequency range 2167 to 2197 kHz.

17. Selectivity—The selectivity shall be such as to allow a bearing to be taken readily without interference from other radio transmissions on frequencies more than 2 kHz from the desired signal.

18. Signal Identification—(1) Means of audio-monitoring shall be provided regardless of the method used for direction-finding.

(2) The equipment shall be operated with headphones. A loudspeaker, if provided, shall be capable of being rendered inoperative by simple means.

19. Bearing indication—Means shall be provided to indicate the bearing of the desired transmission. Such indication shall be capable of being easily, rapidly and precisely resolved within 0.25 degrees.

20. Bearing accuracy—(1) The instrumental accuracy in taking relative bearings shall be within $\pm 1^\circ$. This requirement

shall be met at all frequencies in the frequency bands specified in clause 16 of this performance standard and throughout the whole 360 degrees of azimuth at field strength values between 50 $\mu\text{V/m}$ and 50 mV/m . The instrumental accuracy referred to above does not include the operational accuracy attainable in service, which shall be determined for each installation. In particular the operational accuracies in the 2 MHz band shall be sufficient for homing purposes.

(2) Pre-set facilities to correct the quadrantal error shall normally be provided for the frequency band 255–525 kHz.

21. Manual controls and their operation—(1) A tuning scale or indicator shall be provided, calibrated to indicate directly the carrier frequency of the signal to which the equipment is intended to be tuned.

(2)(a) If a tuning scale is provided, at all points in its range, 1mm shall correspond to not more than 2.5 kHz in the frequency range 255–525 kHz.

(b) The maritime distress frequencies shall be prominently marked.

(c) Where other means of frequency indication are provided, the resolution shall be at least 1 kHz.

(3) All controls shall be of such size and location as to permit normal adjustments to be easily performed, and shall be easy to identify and use.

(4) The sense switch, if fitted, shall be of a non-locking type.

22. Operational availability—The equipment shall be ready for operation within 60 seconds of switching on.

23. Special requirements for different methods of direction-finding—(1) Aural minimum method

(a) With a field strength sufficient to ensure a signal/noise ratio of at least 50 dB, a change in the setting of the bearing indicator of 5° in either direction from the position of minimum output shall cause the audio-frequency output to increase by not less than 18 dB. Similarly, a change of 90° in either direction shall cause an increase of not less than 35 dB.

(b) The equipment shall be provided with a minimum-clearing control giving a noticeable minimum of the output at all settings.

(c) The sense shall be determined with reference to the lower output.

(d) The sense ratio in the frequency ranges 255–525 kHz and 2167–2197 kHz shall be 15 dB and 10 dB, respectively.

(e) The automatic gain control, if provided, shall be rendered inoperative automatically when the equipment is used for bearing determination.

(2) Other methods

(a) There shall be means of indicating that the receiver gain and signal strength are sufficient to enable a correct bearing to be taken.

(b) With a field strength of 1mV/m the indicated bearing shall not change by more than 1° when the receiver is detuned to a point where the indication referred to in sub-paragraph (a) above shows that the signal strength is just sufficient to take a bearing.

(c) For any signal of strength sufficient to give a bearing indication, there shall be no observable change of indicated bearing when the beat frequency oscillator is switched on.

(d) Fluctuations of the indicated bearing caused by any servo mechanism shall not exceed $\pm 0.5^\circ$ from the mean value.

(e) If, after identifying a station the bearing of which is required, it is necessary to check or alter the adjustment of any control as part of the process of direction-finding, this check and adjustment shall be capable of being made within 10 seconds.

24. Miscellaneous—The equipment shall be protected from excessive voltages induced in the aerials.

Part IV**Performance Standards for Gyro-compasses**

25. Function—(1) The gyro-compass shall determine the direction of the ship's head in relation to geographic (true) north.

(2) The equipment shall comply with the following minimum performance requirements.

26. Definitions—For the purpose of this performance standard, the following definitions apply:

(1) The term "gyro-compass" comprises the complete equipment and includes all essential elements of the complete design.

(2) The "true heading" is the horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing through the ship's fore and aft datum line. It is measured from true north (000°) clockwise through 360°.

(3) The compass is said to be "settled" if any three readings taken at intervals of thirty minutes, when the compass is on a level and stationary base, are within a band of 0.7°.

(4) The "settle point heading" is the mean value of ten readings taken at twenty minute intervals after the compass has settled as defined in subclause 3 of this clause.

(5) The "settle point error" is the difference between settle point heading and true heading.

(6) The other errors to which the gyro-compass is subject are taken to be the difference between the observed value and the settle point heading.

27. Method of Presentation—The compass card shall be graduated in equal intervals of one degree or a fraction thereof. A numerical indication shall be provided at least at every ten degrees, starting from 000° clockwise through 360°.

28. Accuracy—(1) Settling of equipment

(a) When switched on in accordance with the manufacturer's instructions the compass shall settle within six hours in latitudes of up to 60°.

(b) The settle point error as defined in clause 26(5) at any heading and at any latitude up to 60° shall not exceed $\pm 0.75 \times \secant \text{ latitude}$ where heading indications of the compass shall be taken as the mean of 10 readings at 20 minute intervals, and the root mean square value of the differences between individual heading indications and the mean shall be less than $0.25^\circ \times \secant \text{ latitude}$. The repeatability of settle point error from one run-up to another shall be within $0.25^\circ \times \secant \text{ latitude}$.

(2) Performance under operational conditions

(a) When switched on in accordance with the manufacturer's instructions, the compass shall settle within six hours in latitudes of up to 60° when rolling and pitching with simple harmonic motion of any period between six and fifteen seconds, a maximum angle of 5°, and a maximum horizontal acceleration of 0.22m/s^2 .

(b) The repeatability of the settle point error of the master compass shall be within $\pm 1^\circ \times \secant \text{ latitude}$ under the general conditions mentioned in clauses 4 and 5 of this performance standard and including variations in magnetic field likely to be experienced in the ship in which it is installed.

(c) In latitudes of up to 60°:

(i) the residual steady state error, after correction for speed and course influences at a speed of twenty knots, shall not exceed $\pm 0.25 \times \secant \text{ latitude}$;

(ii) the error due to a rapid alteration of speed of twenty knots shall not exceed $\pm 2^\circ$;

(iii) the error due to a rapid alteration of course of 180° at a speed of twenty knots shall not exceed $\pm 3^\circ$;

(iv) the transient and steady state errors due to the ship

rolling, pitching and yawing, with simple harmonic motion of any period between six and fifteen seconds, maximum angle of 20°, 10° and 5° respectively, and maximum horizontal acceleration not exceeding 1m/s^2 , shall not exceed $1^\circ \times \secant \text{ latitude}$.

(d) The maximum divergence in reading between the master compass and repeaters under all operational conditions shall not exceed $\pm 0.5^\circ$.

(3) To ensure that the maximum error referred to in subclause (2)(c)(iv) of this clause is not exceeded in practice, it will be necessary to pay particular attention to the siting of the master compass.

29. Construction and Installation—(1) The master compass and any repeaters used for taking visual bearings shall be installed in a ship with their fore and aft datum lines parallel to the ship's fore and aft datum line to within $\pm 0.5^\circ$. The lubber line shall be in the same vertical plane as the centre of the card of the compass and shall be aligned accurately in the fore and aft direction.

(2) Means shall be provided for correcting the errors induced by speed and latitude.

(3) An automatic alarm shall be provided to indicate a major fault in the compass system.

(4) The system shall be designed to enable heading information to be provided to other navigational aids such as radar, radio direction-finder and automatic pilot.

Part V**Performance Standards for Newer Radar Equipment**

30. Application—These Performance Standards apply to all ships' radar equipment installed on or after 1 September 1984.

31. General—The radar equipment shall provide an indication, in relation to the ship, of the position of other surface craft and obstructions and of buoys, shorelines and navigational marks in a manner which will assist in navigation and in avoiding collision.

32. All Radar Installations—All radar installations shall comply with the minimum requirements in the following clauses.

33. Range performance—The operational requirement under normal propagation conditions, when the radar antenna is mounted at a height of 15 metres above sea level, is that the equipment shall in the absence of clutter give a clear indication of:

(1) Coastlines

(a) At 20 nautical miles when the ground rises to 60 metres

(b) At 7 nautical miles when the ground rises to 6 metres.

(2) Surface objects

(a) At 7 nautical miles a ship of 5,000 tons gross tonnage, whatever her aspect.

(b) At 3 nautical miles a small vessel of 10 metres in length.

(c) At 2 nautical miles an object such as a navigational buoy having an effective echoing area of approximately 10 square metres.

34. Minimum Range—The surface objects specified in clause 33(2) of this performance standard shall be clearly displayed from a minimum range of 50 metres up to a range of one nautical mile, without changing the setting of controls other than the range selector.

35. Display—(1) The equipment shall without external magnification provide a relative plan display in the head-up unstabilised mode with an effective diameter of not less than:

(a) 180 millimetres on ships of 500 gross tonnage and more but less than 1,600 gross tonnage;

(b) 250 millimetres on ships of 1,600 gross tonnage and more but less than 10,000 gross tonnage;

(c) 340 millimetres in the case of one display and 250 millimetres in the case of the other on ships of 10,000 gross tonnage and upwards.

(2) The equipment shall provide one of the two following sets of range scales of display:

(a) 1.5, 3, 6, 12 and 24 nautical miles and one range scale of not less than 0.5 and not greater than 0.8 nautical miles; or

(b) 1, 2, 4, 8, 16 and 32 nautical miles.

(3) Additional range scales may be provided.

(4) The range scale displayed and the distance between range rings shall be clearly indicated at all times.

36. Range measurement—(1) Fixed electronic range rings shall be provided for range measurements as follows:

(a) where range scales are provided in accordance with clause 35(2)(a) of this performance standard, on the range scale of between 0.5 and 0.8 nautical miles at least two range rings shall be provided and on each of the other range scales six range rings shall be provided, or

(b) where range scales are provided in accordance with clause 35(2)(b) of this performance standard, four range rings shall be provided on each of the range scales.

(2) A variable electronic range marker shall be provided with a numeric readout of range.

(3) The fixed range rings and the variable range marker shall enable the range of an object to be measured with an error not exceeding 1.5 per cent of the maximum range of the scale in use, or 70 metres, whichever is the greater.

(4) It shall be possible to vary the brilliance of the fixed range rings and the variable range marker and to remove them completely from the display.

37. Heading Indicator—(1) The heading of the ship shall be indicated by a line on the display with a maximum error not greater than plus or minus 1 degree. The thickness of the displayed heading line shall not be greater than 0.5 degrees.

(2) Provision shall be made to switch off the heading indicator by a device which cannot be left in the "heading marker off" position.

38. Bearing measurement—(1) Provision shall be made to obtain quickly the bearing of any object whose echo appears on the display.

(2) The means provided for obtaining bearings shall enable the bearing of a target whose echo appears at the edge of the display to be measured with an accuracy of plus or minus 1 degree or better.

39. Discrimination—(1) The equipment shall be capable of displaying as separate indications on a range scale of 2 nautical miles or less, two small similar targets at a range of between 50 per cent and 100 per cent of the range scale in use, and on the same azimuth, separated by not more than 50 metres in range.

(2) The equipment shall be capable of displaying as separate indications two small similar targets both situated at the same range between 50 per cent and 100 per cent of the 1.5 or 2 mile range scales, and separated by not more than 2.5 degrees in azimuth.

40. Roll or pitch—The performance of the equipment shall be such that when the ship is rolling or pitching up to plus or minus 10 degrees the range performance requirements of clauses 33 and 34 of this performance standard continue to be met.

41. Scan—The scan shall be clockwise, continuous and automatic through 360 degrees of azimuth. The scan rate shall be not less than 12 revolutions per minute. The equipment shall operate satisfactorily in relative wind speeds of up to 100 knots.

42. Azimuth stabilisation—(1) Means shall be provided to enable the display to be stabilised in azimuth by a transmitting compass. The equipment shall be provided with a compass input to enable it to be stabilised in azimuth. The accuracy of alignment with the compass transmission shall be within 0.5 degrees with a compass rotation rate of 2 revolutions per minute.

(2) The equipment shall operate satisfactorily in the unstabilised mode when the compass control is inoperative.

43. Performance check—Means shall be available, while the equipment is used operationally, to determine readily a significant drop in performance relative to a calibration standard established at the time of installation, and to check that the equipment is correctly tuned in the absence of targets.

44. Anti-clutter devices—Suitable means shall be provided for the suppression of unwanted echoes from sea clutter, rain and other forms of precipitation, clouds and sandstorms. It shall be possible to adjust manually and continuously the anti-clutter controls. Anti-clutter controls shall be inoperative in the fully anti-clockwise positions. In addition, automatic anti-clutter controls may be provided; however, they must be capable of being switched off.

45. Operation—(1) The equipment shall be capable of being switched on and operated from the display position.

(2) Operational controls shall be accessible and easy to identify and use. Where symbols are used they shall comply with the recommendations of the Organisation on symbols for controls on marine navigational radar equipment.

(3) After switching on from cold the equipment shall become fully operational within 4 minutes.

(4) A standby condition shall be provided from which the equipment can be brought to an operational condition within 15 seconds.

46. Interference—After installation and adjustment on board, the bearing accuracy as prescribed in clause 38 of this performance standard shall be maintained without further adjustment irrespective of the movement of the ship in the earth's magnetic field.

47. Sea or ground stabilisation (true motion display)—(1) Where sea or ground stabilisation is provided the accuracy and discrimination of the display shall be at least equivalent to that required by this performance standard.

(2) The motion of the trace origin shall not, except under manual override conditions, continue to a point beyond 75 per cent of the radius of the display. Automatic resetting may be provided.

48. Antenna system—The antenna system shall be installed in such a manner that the design efficiency of the radar system is not substantially impaired.

49. Operation with radar beacons—(1) All radars operating in the 3 centimetre band shall be capable of operating in a horizontally polarized mode.

(2) It shall be possible to switch off those signal processing facilities which might prevent a radar beacon from being shown on the radar display.

50. Multiple radar installations—(1) Where two radars are required to be carried they shall be so installed that each radar can be operated individually and both can be operated simultaneously without being dependent upon one another. When an emergency source of electrical power is provided both radars shall be capable of being operated from this source.

(2) Where two radars are fitted, interswitching facilities may be provided to improve the flexibility and availability of the overall radar installation. They shall be so installed that failure of either radar would not cause the supply of electrical energy to the other radar to be interrupted or adversely affected.

Part VI**Performance Standards for Older Radar Equipment**

51. Application—These performance standards apply to all ships' radar equipment installed before 1 September 1984.

52. General—The radar equipment shall provide an indication in relation to the ship of the position of other surface craft and obstructions and of buoys, shorelines and navigational marks in a manner which will assist in avoiding collision and in navigation.

53. It shall comply with the minimum requirements in the following clauses:

54. Range Performance—The operational requirement under normal propagation conditions, when the radar aerial is mounted at a height of 15 metres above sea level is that the equipment shall give a clear indication of:

(1) Coastlines

(a) At 20 nautical miles when the ground rises to 60 metres.

(b) At 7 nautical miles when the ground rises to 6 metres.

(2) Surface Objects

(a) At 7 nautical miles a ship of 5,000 gross tonnage, whatever her aspect.

(b) At 3 nautical miles a small vessel of length 10 metres.

(c) At 2 nautical miles an object such as a navigational buoy having an effective echoing area of approximately 10 square metres.

55. Minimum range—The surface objects specified in clause (54)(2) of this performance standard shall be clearly displayed from a minimum range of 50 metres up to a range of one nautical mile, without adjustment of controls other than the range selected.

56. Display—(1) The equipment shall provide a relative plan display of not less than 180mm effective diameter.

(2) The equipment shall be provided with at least five ranges, the smallest of which is not more than one nautical mile and the greatest of which is not less than 24 nautical miles. Additional ranges may be provided.

(3) Positive indication shall be given of the range of view displayed and the interval between range rings.

57. Range measurement—(1) The primary means provided for range measurement shall be fixed electronic range rings. There shall be at least four range rings displayed on each of the ranges mentioned in clause 56(2) of this performance standard, except that on ranges below one nautical mile range rings shall be displayed at intervals of 1/4 nautical mile.

(2) Fixed range rings shall enable the range of an object, whose echo lies on a range ring, to be measured with an error not exceeding 1.5 per cent of the maximum range of the scale in use, or 70 metres, whichever is the greater.

(3) Any additional means of measuring range shall have an error not exceeding 2.5 per cent of the maximum range of the displayed scale in use, or 120 metres, whichever is the greater.

58. Heading Indicator—(1) The heading of the ship shall be indicated by a line on the display with a maximum error not greater than $\pm 1^\circ$. The thickness of the displayed heading line shall not be greater than $\frac{1}{2}^\circ$.

(2) Provision shall be made to switch off the heading indicator by a device which cannot be left in the "heading marker off" position.

59. Bearing measurement—(1) Provision shall be made to obtain quickly the bearing of any object whose echo appears on the display.

(2) The means provided for obtaining bearings shall enable the bearing of a target whose echo appears at the edge of the display to be measured with an accuracy of $\pm 1^\circ$ or better.

60. Discrimination—(1) The equipment shall display as

separate indications, on the shortest range scale provided, two objects on the same azimuth separated by not more than 50 metres in range.

(2) The equipment shall display as separate indications two objects at the same range separated by not more than 2.5° in azimuth.

(3) The equipment shall be designed to avoid, as far as is practicable, the display of spurious echoes.

61. Roll—The performance of the equipment shall be such that when the ship is rolling $\pm 10^\circ$ the echoes of targets remain visible on the display.

62. Scan—The scan shall be continuous and automatic through 360 degrees of azimuth, the target data rate shall be at least 12 per minute and the equipment shall operate satisfactorily in relative wind speeds of up to 100 knots.

63. Azimuth stabilisation—(1) Means shall be provided to enable the display to be stabilised in azimuth by a transmitting compass. The accuracy of alignment with the compass transmission shall be within $\frac{1}{2}^\circ$ with a compass rotation rate of 2 r.p.m.

(2) The equipment shall operate satisfactorily for relative bearings when the compass control is inoperative or not fitted.

64. Performance check—Means shall be available, while the equipment is used operationally, to determine readily a significant drop in performance relative to a calibration standard established at the time of installation.

65. Anti-clutter devices—Means shall be provided to minimise the display of unwanted responses from precipitation and the sea.

66. Operation—(1) The equipment shall be capable of being switched on and operated from the main display position.

(2) Operational controls shall be accessible and easy to identify and use.

(3) After switching on from cold, the equipment shall become fully operational within 4 minutes.

(4) A standby condition shall be provided from which the equipment can be brought to a fully operational condition within one minute.

67. Interference—After installation and adjustment on board, the bearing accuracy as prescribed in clause 59 of this performance standard shall be maintained without further adjustment irrespective of the variation of external magnetic fields.

68. Sea or Ground Stabilisation—Sea or ground stabilisation, if provided, shall not degrade the accuracy of the display below the requirements of this performance standard, and the view ahead on the display shall not be unduly restricted by the use of this facility.

69. The aerial system shall be installed in such a manner that the efficiency of the display is not impaired by the close proximity of the aerial to other objects. In particular, blind sectors in the forward direction should be avoided.

Part VII Performance Standards for Automatic Radar Plotting Aids (ARPA)

70. General—(1) Automatic radar plotting aids (ARPA) shall, in order to improve the standard of collision avoidance at sea:

(a) reduce the work-load of observers by enabling them to automatically obtain information so that they can perform as well with multiple targets as they can by manually plotting a single target;

(b) provide continuous, accurate and rapid situation evaluation.

(2) In addition to the general requirements for electronic navigational aids the ARPA shall comply with the following minimum performance standards.

71. Definitions—Definitions of terms used in this Part VII of these performance standards are:

Relative course means—the direction of motion of a target related to own ship as deduced from a number of measurements of its range and bearing on the radar, expressed as an angular distance from north.

Relative speed means—the speed of a target related to own ship, as deduced from a number of measurements of its range and bearing on the radar.

True course means—the apparent heading of a target obtained by the vectorial combination of the target's relative motion and own ship's motion*, expressed as an angular distance from north.

True speed means—the speed of a target obtained by the vectorial combination of its relative motion and own ship's motion*.

Bearing means—the direction of one terrestrial point from another, expressed as an —distance from north.

* For the purpose of these definitions there is no need to distinguish between sea and ground stabilisation.

Relative motion display means—the position of own ship on such a display remains fixed. **True motion display means**—the position of own ship on such a display moves in accordance with its own motion.

Azimuth stabilisation means—own ship's compass information is fed to the display so that echoes of targets on the display will not be caused to smear by changes of own ship's heading.

—north-up—the line connecting the centre with the top of the display is north.

—head-up—the line connecting the centre with the top of the display is own ship's heading.

—course-up—an intended course can be set to the line connecting the centre with the top of the display.

Heading means—the direction in which the bows of a vessel are pointing, expressed as an angular distance from north.

Target's predicted motion means—the indication on the display of a linear extrapolation into the future of a target's motion, based on measurements of the target's range and bearing on the radar in the recent past.

Target's motion trend means—an early indication of the target's predicted motion.

Radar plotting means—the whole process of target detection, tracking, calculation of parameters and display of information.

Detection means—the recognition of the presence of a target.

Acquisition means—the selection of those targets requiring a tracking procedure and the initiation of their tracking.

Tracking means—the process of observing the sequential changes in the position of a target, to establish its motion.

Display means—the plan position presentation of ARPA data with radar data.

Manual means—relating to an activity which a radar observer performs, possibly with assistance from a machine. **Automatic means** relating to an activity which is performed wholly by a machine.

72. Detection—Where a separate facility is provided for detection of targets, other than by the radar observer, it shall have a performance not inferior to that which could be obtained by the use of the radar display.

73. Acquisition—(1) Target acquisition may be manual or automatic. However, there shall always be a facility to provide for manual acquisition and cancellation. ARPA with automatic acquisition shall have a facility to suppress acquisition in certain areas. On any range scale where acquisition is suppressed over a certain area, the area of acquisition shall be indicated on the display.

(2) Automatic or manual acquisition shall have a performance not inferior to that which could be obtained by the user of the radar display.

74. Tracking—(1) The ARPA shall be able to automatically track, process, simultaneously display and continuously update the information on at least:

(a) 20 targets, if automatic acquisition is provided, whether automatically or manually acquired;

(b) 10 targets, if only manual acquisition is provided.

(2) If automatic acquisition is provided, description of the criteria of selection of targets for tracking shall be provided to the user. If the ARPA does not track all targets visible on the display, targets which are being tracked shall be clearly indicated on the display. The reliability of tracking shall not be less than that obtainable using manual recordings of successive target positions obtained from the radar display.

(3) Provided the target is not subject to target swop, the ARPA shall continue to track an acquired target which is clearly distinguishable on the display for 5 out of 10 consecutive scans.

(4) The possibility of tracking errors, including target swop, shall be minimised by ARPA design. A qualitative description of the effects of error sources on the automatic tracking and corresponding errors shall be provided to the user, including the effects of low signal-to-noise and low signal-to-clutter ratios caused by sea returns, rain, snow, low clouds and non-synchronous emissions.

(5) The ARPA shall be able to display on request at least four equally time-spaced past positions of any targets being tracked over a period of at least eight minutes.

75. Display—(1) The display may be a separate or integral part of the ship's radar. However, the ARPA display shall include all the data required to be provided by a radar display in accordance with the performance standards for navigational radar equipment adopted by IMO.

(2) The design shall be such that any malfunction of ARPA parts producing data additional to information to be produced by the radar as required by the performance standards for navigational equipment adopted by IMO shall not affect the integrity of the basic radar presentation.

(3) The display on which ARPA information is presented shall have an effective diameter of at least 340mm.

(4) The ARPA facilities shall be available on at least the following range scales:

(a) 12 or 16 nautical miles;

(b) 3 or 4 nautical miles.

(5) There shall be a positive indication of the range scale in use.

(6) The ARPA shall be capable of operating with a relative motion display with "north-up" and either "head-up" or "course-up" azimuth stabilisation. In addition, the ARPA may also provide for a true motion display. If true motion is provided, the operator shall be able to select for his display either true or relative motion. There shall be a positive indication of the display mode and orientation in use.

(7) The course and speed information generated by the ARPA for acquired targets shall be displayed in a vector or graphic form which clearly indicates the target's predicted motion. In this regard:

(a) ARPA presenting predicted information in vector form only shall have the option of both true and relative vectors;

(b) an ARPA which is capable of presenting target course and speed information in graphic form shall also, on request, provide the target's true and/or relative vector;

(c) vectors displayed shall either be time-adjustable or have a fixed time-scale;

(d) a positive indication of the time-scale of the vector in use shall be given.

(8) The ARPA information shall not obscure radar information in such a manner as to degrade the process of detecting targets. The display of ARPA data shall be under the control of the radar observer. It shall be possible to cancel the display of unwanted ARPA data.

(9) Means shall be provided to adjust independently the brilliance of the ARPA data and radar data, including complete elimination of the ARPA data.

(10) The method of presentation shall ensure that the ARPA data are clearly visible in general to more than one observer in the conditions of light normally experienced on the bridge of a ship by day and by night. Screening may be provided to shade the display from sunlight but not to the extent that it will impair the observers' ability to maintain a proper lookout. Facilities to adjust the brightness shall be provided.

(11) Provisions shall be made to obtain quickly the range and bearing of any object which appears on the ARPA display.

(12) When a target appears on the radar display and, in the case of automatic acquisition, enters within the acquisition area chosen by the observer or, in the case of manual acquisition, has been acquired by the observer, the ARPA shall present in a period of not more than one minute an indication of the target's motion trend and display within three minutes the target's predicted motion in accordance with clauses 75(7), 77, 79(2) and 79(3) of this performance standard.

(13) After changing range scales on which the ARPA facilities are available or resetting the display, full plotting information shall be displayed within a period of time not exceeding four scans.

76. Operational warnings—(1) The ARPA shall have the capability to warn the observer with a visual and/or audible signal of any distinguishable target which closes to a range or transits a zone chosen by the observer. The target causing the warning shall be clearly indicated on the display.

(2) The ARPA shall have the capability to warn the observer with a visual and/or audible signal of any tracked target which is predicted to close to within a minimum range and time chosen by the observer. The target causing the warning shall be clearly indicated on the display.

(3) The ARPA shall clearly indicate if a tracked target is lost, other than out of range, and the target's last tracked position shall be clearly indicated on the display.

(4) It shall be possible to activate or de-activate the operational warnings.

77. Data requirements—(1) At the request of the observer the following information shall be immediately available from the ARPA in alphanumeric form in regard to any tracked target:

- (a) present range to the target;
- (b) present bearing of the target;
- (c) predicted target range at the closest point of approach (CPA);
- (d) predicted time to CPA (TCPA);
- (e) calculated true course of target; and
- (f) calculated true speed of target.

78. Trial manoeuvre—The ARPA shall be capable of simulating the effect on all tracked targets of an own ship manoeuvre without interrupting the updating of target information. The simulation shall be initiated by the depression either of a spring-loaded switch, or of a function key, with a positive identification on the display.

79. Accuracy—(1) The ARPA shall provide accuracies not less than those given in sub-clause (2) and (3) for the four scenarios defined in subclause (5) of this clause. With the sensor errors specified in sub-clause (6) of this clause, the

values given relate to the best possible manual plotting performance under environmental conditions of plus and minus ten degrees of roll.

(2) An ARPA shall present within one minute of steady state tracking the relative motion trend of a target with the following accuracy values (95 per cent probability values).

Scenario	Data		
	Relative course (degrees)	Relative speed (knots)	CPA (nautical miles)
1	11	2.8	1.6
2	7	0.6	
3	14	2.2	1.8
4	15	1.5	2.0

(3) An ARPA shall present within three minutes of steady state tracking the motion of a target with the following accuracy values (95 per cent probability values).

Scenario	Data					
	Relative course (degrees)	Relative speed (knots)	CPA (nautical miles)	TCPA (mins)	True Course (degrees)	True Speed (knots)
1	3.0	0.8	0.5	1.0	7.4	1.2
2	2.3	0.3			2.8	0.8
3	4.4	0.9	0.7	1.0	3.3	1.0
4	4.6	0.8	0.7	1.0	2.6	1.2

(4) When a tracked target, or own ship, has completed a manoeuvre, the system shall present in a period of not more than one minute an indication of the target's motion trend, and display within three minutes the target's predicted motion, in accordance with clauses 75(7), 77, 79(2) and 79(3) of this performance standard.

(5) The ARPA shall be designed in such a manner that under the most favourable conditions of own ship motion the error contribution from the ARPA shall remain insignificant compared to the errors associated with the input sensors, for the scenarios following.

For each of the following scenarios predictions are made at the target position defined after previously tracking for the appropriate time of one or three minutes:

(a)	Scenario 1	
	Own ship course	000°
	Own ship speed	10 knots
	Target range	8 nautical miles
	Bearing of target	000°
(b)	Scenario 2	
	Own ship course	000°
	Own ship speed	10 knots
	Target range	1 nautical mile
	Bearing of target	000°
(c)	Scenario 3	
	Own ship course	000°
	Own ship speed	5 knots
	Target range	8 nautical miles
	Bearing of target	045°
(d)	Scenario 4	
	Own ship course	000°
	Own ship speed	25 knots
	Target range	8 nautical miles
	Bearing of target	045°

(6) Sensor Errors—The accuracy figures quoted in this clause are based upon the following sensor errors and are appropriate to equipment complying with IMO's performance standards for shipborne navigational equipment.

Note: σ means "standard deviation".

(a) Radar

(i) Target glint (scintillation) (for 200m length target).

Along length of target $\sigma = 30$ metres (normal distribution).

Across beam of target $\sigma = 1$ metre (normal distribution).

(ii) Roll pitch bearing

The bearing error will peak in each of the four quadrants

around own ship for targets on relative bearings of 045°, 135°, 225° and 315° and will be zero at relative bearings of 0°, 90°, 180° and 270°. This error has a sinusoidal variation at twice the roll frequency.

For a 10° roll the mean error is 0.22° with a 0.22° peak sine wave superimposed.

Beam shape—assumed normal distribution giving bearing error with $\sigma = 0.05^\circ$.

Pulse shape—assumed normal distribution giving range error with $\sigma = 20$ metres.

Antenna backlash—assumed rectangular distribution giving bearing error $\pm 0.5^\circ$ maximum.

(iii) Quantification

Bearing—rectangular distribution $\pm 0.01^\circ$ maximum.

Range—rectangular distribution $\pm 0.01^\circ$ nautical miles maximum.

Bearing encoder assumed to be running from a remote synchro giving bearing errors with a normal distribution $\sigma = 0.03^\circ$.

(b) Gyro-compass

Calibration error 0.5°.

Normal distribution about this with $\sigma = 0.12^\circ$.

(c) Log

Calibration error 0.5 knots

Normal distribution about this, $3\sigma = 0.2$ knots.

80. Connections with other equipment—The ARPA shall not degrade the performance of any equipment providing sensor inputs. The connection of the ARPA to any other equipment shall not degrade the performance of that equipment.

81. Performance tests and warnings—The ARPA shall provide suitable warnings of ARPA malfunction to enable the observer to monitor the proper operation of the system. Additionally, test programmes shall be available so that the overall performance of ARPA can be assessed periodically against a known solution.

82. Equipment used with ARPA—Log and speed indicators providing inputs to ARPA equipment shall be capable of providing the ship's speed through the water.

Part VIII

Performance Standards for Devices to Indicate Speed and Distance

83. General—(1) Devices to indicate speed and distance are intended for general navigational use to provide information on the distance run and the forward speed of the ship, through the water or over the ground. The equipment shall function at forward speeds up to the maximum speed of the ship and in water of depth greater than 3 metres beneath the keel.

(2) In addition to the general requirements for electronic navigational aids the equipment shall conform to the following minimum performance standards.

84. Methods of presentation—(1) Speed information may be presented in either analogue or digital form. Where a digital display is used, its incremental steps shall not exceed 0.1 knots. Analogue displays shall be graduated at least every 0.5 knots and be marked with figures at least every 5 knots. If the display can present the speed of the ship in both forward and reverse directions, the direction of movement shall be indicated unambiguously.

(2) Distance run information shall be presented in digital form. The display shall cover the range from 0 to not less than 9999.9 nautical miles and the incremental steps shall not exceed 0.1 nautical miles. Where practicable, means shall be provided for resetting a readout to zero.

(3) The display shall be easily readable by day and by night.

(4) Means shall be provided for feeding distance run information to other equipment fitted on board. The

information shall be in the form of one contact closure or the equivalent for every 0.005 nautical miles run.

(5) If equipment is capable of being operated in either the "speed through the water" or "speed over the ground" modes, mode selection and mode indication shall be provided.

85. Accuracy of Measurement—(1) Errors in the indicated speed, when the ship is operating free from shallow water effect, and from the effects of wind, current and tide shall not exceed 5 per cent of the speed of the ship, or 0.5 knots, whichever is the greater.

(2) Errors in the indicated distance run, when the ship is operating free from shallow water effect, and from the effects of wind, current and tide shall not exceed 5 per cent of the distance run by the ship in one hour or 0.5 nautical miles in each hour, whichever is the greater.

(3) If the accuracy of devices to indicate speed and distance run can be affected by certain conditions (e.g. sea state and its effects, water temperature, salinity, sound velocity in water, the depth of water under the keel, heel and trim of ship), details of possible effects shall be included in the equipment handbook.

86. Roll and Pitch—The performance of the equipment shall be such that it will meet the requirements of this Schedule when the ship is rolling up to plus or minus 10 degrees and pitching up to plus or minus 5 degrees.

87. Construction and Installation—(1) The system shall be so designed that neither the method of attachment of parts of the equipment to the ship nor damage occurring to any part of the equipment which penetrates the hull could result in the ingress of water to the ship.

(2) Where any part of the system is designed to extend from and retract into the hull of the ship, the design shall ensure that it can be extended, operated normally and retracted at all speeds up to the maximum speed of the ship. Its extended and retracted positions shall be clearly indicated at the display position.

Part IX

Performance Standards for Rate-of-turn Indicators

88. General Requirements—(1) The rate-of-turn indicator (ROTI) shall, in addition to the requirements of these standards, comply with the general requirements for electronic navigational aids.

(2) The ROTI shall be capable of indicating rates of turn to starboard and to port of the ship to which it is fitted.

(3) The ROTI may be self-contained; alternatively it may form part of, or derive information from, any other appropriate equipment.

89. Indication—(1) The indication required shall be provided by a centre-zero analogue type indicator (preferably circular). Where a circular scale indicator is used, the zero shall be uppermost.

(2) A turn of ship to port shall be indicated on the left of the zero point and a starboard turn to the right of the zero point. If the actual rate of turn exceeds full scale deflection, this shall be clearly indicated on the display.

(3) In addition, an alphanumeric display may be provided. Positive indication of port and starboard shall be provided on such displays.

(4) The length of scale in either direction from zero shall not be less than 120mm. The sensitivity of the system shall ensure that a change in the rate of turn of 1° per minute is represented by a distance of not less than 4mm on its scale.

90. Range Scales—(1) A linear range scale of not less than $\pm 30^\circ$ per minute shall be provided. This scale shall be marked in intervals of 1° per minute on both sides of zero. The scale shall be marked with figures every 10° per minute. Every 10° mark shall be significantly longer than the 5° mark which

in turn shall be significantly longer than the 1° mark. The marks and figures shall preferably be red or a light colour on a dark background.

(2) Additional linear range scales may be provided.

(3) Damping of the ROTI shall be provided with a time constant which may be varied during operation in the range zero to at least 10 seconds.

91. Accuracy—(1) The indicated rate of turn shall not deviate from the actual rate of turn of the ship by more than 0.5° per minute plus 5 per cent of the indicated rate of turn of the ship. These values include the influence of earth rate.

(2) Periodic rolling motion of the ship with an amplitude of $\pm 5^\circ$ and period of up to 25 seconds and periodic pitching motion with an amplitude of $\pm 1^\circ$ and period of up to 20 seconds shall not change the mean value of the indicated rate of turn by more than 0.5° per minute.

(3) The ROTI shall meet these accuracy requirements at all ship speeds up to 10 knots.

92. Operation—(1) The ROTI shall be ready for operation and comply with these standards within 4 minutes of being switched on.

(2) The design shall be such that whether operating or not the ROTI will not degrade the performance of any other equipment to which it is connected.

(3) The ROTI shall include a means of enabling the operator to verify that it is operating.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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The Ship Construction (Code of Practice for Ships Required to Comply With the Safety Convention) Notice 1989

Pursuant to Section 197 of the Shipping and Seamen Act 1952, the Minister of Transport hereby gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Ship Construction (Code of Practice for Convention Ships) Notice 1989.

(2) This notice shall come into force on the 1st day of November 1989.

2. Code of Practice prescribed—The Code of Practice set out in the Schedule to this notice is hereby prescribed for the purposes of the Shipping (Construction) Regulations 1989.

3. Application—(1) Except where otherwise provided this Code shall apply to every new New Zealand ship which is

(a) A foreign going passenger ship of Class 1.

(b) A foreign going non-passenger ship of Class VII of 500 gross tonnage or more.

(c) A ship of Class II, III, VI, VII, VIIA, VIII and IX of 45m or more in length which proceeds beyond extended river limits, other than a hydrofoil ship or surface effect ship of Class II, III and VI.

(2) This Code does not apply to Class X (Fishing Vessels).

Schedule

The Ship Construction (Code of Practice For Ships Required to Comply With the Safety Convention) Notice 1989

Contents

Part I—Interpretations

1. Definitions and Meanings

Part II—Ships Structure

2. Structural Strength

3. Scantlings

Part III—Subdivision and Stability

Section A Passenger Ship Subdivision

4. Application

5. Floodable Length

6. Permeability

7. Permissible Length of Compartments

8. Special Requirements Concerning Subdivision

9. Peak and Machinery Space Bulkheads, Shaft Tunnels etc.

10. Double Bottoms

11. Construction and Initial Testing of Watertight Bulkheads etc.

12. Openings in Watertight Bulkheads

13. Ships Carrying Goods Vehicles and Accompanying Personnel

14. Openings in the Shell Plating Below the Margin Line

15. Watertight Integrity Above the Margin Line

16. Integrity of the Hull and Superstructure

17. Construction and Initial Tests of Watertight Doors, Sidescuttles, etc.

18. Construction and Initial Tests of Watertight Decks, Trunks, etc.

19. Subdivision Load Lines

Section B Cargo Ship Subdivision

20. Collision Bulkhead

21. Construction and Initial Testing of Watertight Bulkheads

22. Construction and Initial Testing of Watertight Doors

23. Construction and Initial Testing of Watertight Decks, Trunks, etc.

Section C Stability

24. Stability Information for Passenger Ships and Cargo Ships

25. Stability of Passenger Ships in Damaged Condition

26. Passenger Ship Light Weight Survey

27. Damage Control Plans in Passenger Ships

Part IV Bilge Pumping Arrangements

28. General

29. Passenger Ships

30. Cargo Ships

Part V Machinery Installations

Section A

31. General

32. Means of Going Astern

33. Machinery

34. Machinery Controls

35. Steam Boilers and Boiler Feed Systems

36. Steam Pipe Systems

37. Air Pressure Systems

38. Cooling Water Systems

39. Oil and Fuel Installations

40. Lubricating and other Oil Systems

41. Ventilation Systems in Machinery Spaces

42. Communication between Navigating Bridge and Machinery Space

43. Engineers Alarm

44. Location of Emergency Installations in Passenger Ships

45. Steering Gear

46. Additional Requirements for Electric and Electrohydraulic Steering Gear

47. Protection Against Noise

48. Lifts

49. Spare Gear and Tools

Section B

50. Periodically Unattended Machinery Spaces

51. General

52. Protection Against Flooding

53. Control of Propulsion Machinery from the Navigating Bridge

54. Communication

55. Alarm System

56. Safety System

57. Special Requirements for Machinery, Boiler and Electrical Installations

58. Fire Protection

59. Passenger Ships

Part VI Electrical Installations

60. General

61. Main Source of Electrical Power and Lighting Systems

62. Emergency Source of Electrical Power in Passenger Ships

63. Supplementary Emergency Lighting for Ro-Ro Passenger Ships

64. Emergency Source of Electrical Power in Cargo Ships

65. Starting Arrangements for Emergency Generating Sets

66. Precautions Against Shock, Fire and Other Hazards of Electrical Origin

67. Spare Parts and Tools

Part VII Fire Protection

Section A

68. Basic Principles

Section B

69. Structure

70. Main Vertical Zones and Horizontal Zones

71. Bulkheads Within a Main Vertical Zone

72. Fire Integrity of Bulkheads and Decks in Ships Carrying More than 36 Passengers.

73. Fire Integrity of Bulkheads and Decks in Ships Carrying not More than 36 Passengers

74. Protection of Stairways and Lifts in Accommodation and Service Spaces.

75. Openings in 'A' Class Divisions

76. Openings in 'B' Class Divisions

77. Ventilation Systems in Passenger Ships Carrying More than 36 Passengers.

78. Ventilation Systems in Passenger Ships Carrying Not More than 36 Passengers.

79. Windows and Sidescuttles

80. Restricted Use of Combustible Materials

81. Details of Construction

82. Protection of Special Category Spaces Above or Below the Bulkhead Deck

83. Protection of Cargo Spaces, other than Special Category Spaces, Intended for the Carriage of Motor Vehicles with Fuel in their Tanks for their own Propulsion

84. Special Requirements for Ships Carrying Dangerous Goods

Section C Cargo Ships

85. Structure

86. Bulkheads Within the Accommodation and Service Spaces

87. Fire Integrity of Bulkheads and Decks

88. Protection of Stairways and Lift Trunks in Accommodation Spaces, Service Spaces and Control Stations

89. Doors in Fire Resisting Divisions

90. Ventilation Systems

91. Restricted Use of Combustible Materials

92. Details of Construction

93. Ro-ro Cargo Spaces

94. Cargo Spaces, other than Ro-ro Cargo Spaces, Intended for the Carriage of Motor Vehicles with Fuel in their Tanks for their own Propulsion

95. Special Requirements for Ships Carrying Dangerous Goods

Section D Tankers

96. Application

97. Location and Separation of Spaces

98. Structure, Bulkheads Within Accommodation and Service Spaces and Details of Construction

99. Fire Integrity of Bulkheads and Decks

100. Cargo Tank Venting

101. Cargo Tank Purging and/or Gas Freeing

102. Ventilation

Section E General

103. Special Arrangements in Machinery Spaces

104. Arrangements for Gaseous Fuel for Domestic Purposes

105. Miscellaneous Items

106. Acceptance of Substitutes

Part VIII Miscellaneous Provisions

107. Ballasting

108. Anchors and Chain Cables

109. Hawsers and Warps

110. Means of Escape—Passenger Ships

111. Means of Escape—Cargo Ships

PART I

INTERPRETATION

1. *Definitions and Meanings*—In this Code of Practice, unless the context otherwise requires:

“The Act” means the Shipping and Seamen Act 1952.

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

“A class divisions” means those divisions formed by bulkheads and decks which comply with the following:

(a) they shall be constructed of steel or other equivalent material;

(b) they shall be suitably stiffened;

(c) they shall be so constructed as to be capable of preventing the passage of smoke and flame to the end of the one-hour standard fire test;

(d) they shall be insulated with approved non-combustible materials such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature, at any one point, including any joint, rise more than 180°C above the original temperature, within the time listed below:

Class "A-60" 60 minutes

Class "A-30" 30 minutes

Class "A-15" 15 minutes

Class "A-0" 0 minutes

(e) the Chief Surveyor may require a test of a prototype bulkhead or deck to ensure that it meets the above requirements for integrity and temperature rise.

"Approved" means approved by the Director.

"Auxiliary steering gear" means the equipment other than any part of the main steering gear necessary to steer the ship in the event of failure of the main steering gear but not including the tiller, quadrant or components serving the same purpose.

"B class divisions" means those divisions formed by bulkheads, decks, ceilings or linings which comply with the following:

(a) they shall be so constructed as to be capable of preventing the passage of flame to the end of the first half hour of the standard fire test;

(b) they shall have an insulation value such that the average temperature of the unexposed side will not rise more than 139°C above the original temperature, nor will the temperature at any one point, including any joint, rise more than 225°C above the original temperature, within the time listed below:

Class "B-15" 15 minutes

Class "B-0" 0 minutes

(c) they shall be constructed of approved non-combustible materials and all materials entering into the construction and erection of "B" class divisions shall be non-combustible, with the exception that combustible veneers may be permitted provided they meet other requirements of this Code.

(d) the Chief Surveyor may require a test of a prototype division to ensure that it meets the above requirements for integrity and temperature rise.

"Breadth of the ship" means the extreme width from outside of frame to outside of frame at or below the deepest subdivision load line.

"Bulkhead deck" means the uppermost deck up to which the transverse watertight bulkheads are carried.

"Cargo area" means that part of the ship that contains cargo tanks, slop tanks and cargo pump-rooms including pump-rooms, cofferdams, ballast and void spaces adjacent to cargo tanks and also deck areas throughout the entire length and breadth of the part of the ship over the above-mentioned spaces.

"Cargo spaces" means all spaces used for cargo including cargo oil tanks and trunks to such spaces.

"C class divisions" means divisions constructed of approved non-combustible materials. They need meet neither requirements relative to the passage of smoke and flame nor limitations relative to the temperature rise. Combustible veneers are permitted provided they meet other requirements of this Code.

"Chemical tanker" means a tanker constructed or adapted and used for the carriage in bulk of any liquid product of a flammable nature listed in either:

(a) Chapter 17 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk published by the International Maritime Organisation, hereinafter referred to as "the International Bulk Chemical Code", as may be amended by that Organisation; or

(b) Chapter VI of the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in

Bulk published by the International Maritime Organisation, hereinafter referred to as "the Bulk Chemical Code", as has been or may be amended by that Organisation;

whichever is applicable.

"Chief Surveyor" means the officer of the Ministry of Transport for the time being holding the appointment of Chief Surveyor of Ships; and includes his deputy.

"Classification of ships" is according to the Shipping (Construction) Regulations 1989.

"Closed ro/ro cargo space" means a ro/ro cargo space which is not an open ro/ro space and not a weather deck;

"Combination carrier" means a tanker designed to carry oil or alternatively solid cargoes in bulk.

"Continuous "B" class ceilings or linings" means those

"B" class ceilings or linings which terminate only at an "A" or "B" class division.

"Control room" means a room either within or outside a propelling machinery space from which propelling machinery and boilers may be controlled.

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

"Crude oil" means any oil occurring naturally in the earth whether or not treated to render it suitable for transportation and includes:

(a) crude oil from which certain distillate fractions may have been removed; and

(b) crude oil to which certain distillate fractions may have been added.

"Dangerous goods" has the same meaning as in the Shipping and Seamen Amendment Act 1987.

"Deepest subdivision load line" means the waterline which corresponds to the greatest draught permitted by the subdivision requirements which are applicable.

"Dead ship condition" means the condition under which the main propulsion plant, boilers and auxiliaries are not in operation due to the absence of power.

"Deadweight" means the difference in tonnes between the displacement of a ship in water of a specific gravity of 1.025 at the load waterline corresponding to the assigned summer freeboard and the lightweight of the ship.

"Draught" means the vertical distance from the moulded base line amidships to the subdivision load line in question.

"Director" means the person who is for the time being the Director of the Maritime Transport Division of the Ministry of Transport; and includes his deputy.

"Emergency condition" means a condition under which any services needed for normal operational and habitable conditions are not in working order due to failure of the main source of electrical power.

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

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

"Existing ship" means a ship which is not a new ship.

"Gas Carrier" means a tanker constructed or adapted and

used for the carriage in bulk of any liquefied gas or other products of a flammable nature listed in either:

- (a) Chapter 19 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk published by the International Maritime Organisation, hereinafter referred to as "the International Gas Carrier Code", as may be amended by that Organisation; or
- (b) Chapter XIX of the Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk published by the International Maritime Organisation, hereinafter referred to as "the Gas Carrier Code", as has been or may be amended by that Organisation;

whichever is applicable.

"Hydrofoil Ship" means a ship which is supported above the water surface in normal operating conditions by hydrodynamic forces generated on foils.

"Length of the ship" means the length measured between perpendiculars taken at the extremities of the deepest subdivision load line.

"Lightweight" means the displacement of a ship in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores and passengers and crew and their effects;

"Low flame spread" means that the surface thus described will adequately restrict the spread of flame, this being determined to the satisfaction of the Chief Surveyor by an established test procedure.

"Machinery space" for the purpose of part III of this Code means any space extending from the moulded base line to the margin line and between the extreme main transverse watertight bulkheads, bounding the spaces containing the main and auxiliary propulsion machinery, boilers serving the needs of propulsion, and all permanent coal bunkers. In the case of unusual arrangements, the Chief Surveyor may define the limits of the machinery spaces.

"Machinery space" in every part of this Code except part III means all machinery spaces of category A and all other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilising, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces.

"Machinery spaces of category A" means those spaces and trunks to such spaces which contain:

- (a) internal combustion machinery used for main propulsion; or
- (b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375kW; or
- (c) any oil-fired boiler or oil fuel unit.

"Main generating station" means the space in which the main source of electrical power is situated.

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

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

"Main switchboard" means a switchboard which is directly supplied by the main source of electrical power and is intended to distribute electrical energy to the ship's services.

"Main vertical zones" means those sections into which the hull, superstructure, and deckhouses are divided by "A" class divisions, the mean length of which on any deck does not in general exceed 40m.

"Margin line" means a line drawn at least 76mm below the upper surface of the bulkhead deck at side.

"Maximum ahead service speed" means the greatest speed which the ship is designed to maintain in service at sea at the deepest sea-going draught.

"Maximum astern speed" means the speed which it is estimated the ship can attain at the designed maximum astern power at the deepest seagoing draught.

"Navigable speed" means the minimum speed at which a ship can be effectively steered in the ahead direction.

"New ship" means a ship of which the keel is laid, or in respect of which a similar stage of construction is reached, on or after the date on which the Shipping (Construction) Regulations 1989 come into force; and for the purposes of this definition, "similar stage of construction" means the stage at which construction identifiable with the ship comprises at least 50 tonnes or 1 percent of the estimated mass of the structural material of the completed ship, whichever is the less:

"Non-combustible material" means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C, this being determined to the satisfaction of the Chief Surveyor by an established test procedure. Any other material is a combustible material.

"Normal operational and habitable condition" means a condition under which the ship as a whole, the machinery, services, means and aids ensuring propulsion, ability to steer, safe navigation, fire and flooding safety, internal and external communications and signals, means of escape, and emergency boat winches, as well as the designed comfortable conditions of habitability are in working order and functioning normally.

"Oil fuel unit" means the equipment used for the preparation of oil fuel for delivery to an oil-fired boiler, or equipment used for the preparation for delivery of heated oil to an internal combustion engine, and includes any oil pressure pumps, filters and heaters dealing with oil at a pressure of more than 180 kPa.

"Open ro-ro cargo spaces" means ro-ro cargo spaces either open at both ends, or open at one end provided with adequate natural ventilation effective over their entire length through permanent openings in the side plating or deckhead to the satisfaction of the Chief Surveyor.

"Passenger spaces" means those spaces which are provided for the accommodation and use of passengers, excluding baggage, store, provision and mail rooms. For the purposes of Clauses 6 and 7 of this Code of Practice, spaces provided below the margin line for the accommodation and use of the crew shall be regarded as passenger spaces.

"Permeability", in relation to a space, means the percentage of that space which can be occupied by water. The volume of a space which extends above the margin line shall be measured only to the height of that line:

"Power actuating system" means the hydraulic equipment provided for supplying power to turn the rudder stock, comprising a steering gear power unit or units, together with the associated pipes and fittings, and a rudder actuator. The power actuating systems may share common mechanical components, i.e., tiller, quadrant and rudder stock, or components serving the same purpose.

"Public spaces" means those portions of the

accommodation which are used for halls, dining rooms, lounges and similar permanently enclosed spaces.

“Rooms containing furniture and furnishings of restricted fire risk” means rooms in which:

- (a) all case furniture such as desks, wardrobes, dressing tables, bureaux, dressers, is constructed entirely of approved non-combustible materials, except that a combustible veneer not exceeding 2 millimetres may be used on the finished surface of such furniture;
- (b) all free-standing furniture such as chairs, sofas, tables is constructed with frames of non-combustible materials;
- (c) all draperies, curtains and other suspended textile materials have, to the satisfaction of the Chief Surveyor, qualities of resistance to the propagation of flame not inferior to those of wool of mass 0.8 kg/m²;
- (d) all floor coverings have, to the satisfaction of the Chief Surveyor, qualities of resistance to the propagation of flame not inferior to those of an equivalent woollen material used for the same purpose;
- (e) all exposed surfaces of bulkheads, linings and ceilings have low flame-spread characteristics; and
- (f) all upholstered furniture has qualities of resistance to the ignition and propagation of flame to the satisfaction of the Chief Surveyor.

“Ro/ro cargoes spaces” means spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods (packaged or in bulk), in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles can be loaded and unloaded normally in a horizontal direction;

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

“Special category space” means any enclosed space above or below the bulkhead deck intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven and to which passengers have access.

“Standard fire test” means one in which specimens of the relevant bulkheads or decks are exposed in a test furnace to temperatures corresponding approximately to the standard time-temperature curve. The specimen shall have an exposed surface of not less than 4.65m² and height (or length of deck) of 2.44m, resembling as closely as possible the intended construction and including where appropriate at least one joint. The standard time-temperature curve is defined by a smooth curve drawn through the following temperature points measured above the initial furnace temperature:

- at the end of the first 5 minutes 556°C
- at the end of the first 10 minutes 659°C
- at the end of the first 15 minutes 718°C
- at the end of the first 30 minutes 821°C
- at the end of the first 60 minutes 925°C

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

“Steering gear control system” means the equipment by which orders are transmitted from the navigating bridge

to the steering gear power units. Steering gear control systems comprise transmitters, receivers, hydraulic control pumps and their associated motors, motor controllers, piping and cables.

“Steering gear power unit” means:

- (a) in the case of electric steering gear, an electric motor and its associated electrical equipment;
- (b) in the case of electrohydraulic steering gear, an electric motor and its associated electrical equipment and connected pump;
- (c) in the case of other hydraulic steering gear, a driving engine and connected pump.

“Subdivision load line” means a waterline used in determining the subdivision of the ship.

“Suitable”, in relation to material, means approved by the Director as suitable for the purpose for which it is used.

“Summer load waterline” has the same meaning as in the Load Line Rules 1970.

“Surface effect ship” means a ship the weight of which in the normal operating condition is partially supported by a cushion of air expelled from the ship and by the buoyancy of its immersed hull or hulls.

“Watertight”, in relation to a structure, means capable of preventing the passage of water through the structure in any direction.

“Weather deck” means a deck which is completely exposed to the weather from above and from at least two sides.

“Weathertight” means that in any sea conditions water will not penetrate into the ship.

“Volumes and areas” shall for the purpose of part III of this Code be calculated to moulded lines.

Other expressions defined in the Act have the meaning so defined.

PART II

SHIPS STRUCTURE

2. Structural Strength—(1) The structural strength of every ship shall be sufficient for the service for which the ship is intended.

3. Scantlings—(1) The scantlings of the main structure of every ship shall comply with the appropriate scantling requirements of a classification society approved by the Chief Surveyor.

PART III

SUBDIVISION AND STABILITY

SECTION A—PASSENGER SHIP SUBDIVISION

4. Application—(1) All passenger ships to which this code applies shall comply with this Part unless they comply fully with all the equivalent requirements specified in IMO Resolution A.265 (VIII).

5. Floodable Length—(1) The floodable length at any point of the length of a ship shall be determined by a method of calculation which takes into consideration the form, draught and other characteristics of the ship in question.

(2) In a ship with a continuous bulkhead deck, the floodable length at any given point is the maximum portion of the length of the ship, having its centre at the point in question, which can be flooded under the definite assumptions set forth in clause 6 of this Code without the ship being submerged beyond the margin line.

(3) In the case of a ship not having a continuous bulkhead deck, the floodable length at any point may be determined to an assumed continuous margin line which at no point is less than 76mm below the top of the deck (at side) to which the bulkheads concerned and the shell are carried watertight.

(4) Where a portion of an assumed margin line is appreciably below the deck to which bulkheads are carried, the Chief Surveyor may permit a limited relaxation in the watertightness of those portions of the bulkheads which are above the margin line and immediately under the higher deck.

6. Permeability—(1) The definite assumptions referred to in Clause 5 of this Code relate to the permeability of the spaces below the margin line.

(2) In determining the floodable length, a uniform average permeability shall be used throughout the whole length of each of the following portions of the ship below the margin line:

- (a) the machinery space;
- (b) the portion forward of the machinery space; and
- (c) the portion abaft the machinery space.

(3) The uniform average permeability throughout the machinery space shall be determined from the formula:

$$85 + 10 \left[\frac{a - c}{v} \right]$$

where: a = the volume of the passenger spaces as defined in clause 1 of this Code, which are situated below the margin line within the limits of the machinery space;
 c = the volume of between-deck spaces below the margin line within the limits of the machinery space which are appropriated to cargo, coal or stores;
 v = the whole volume of the machinery space below the margin line.

(4) Where it is shown to the satisfaction of the Chief Surveyor that the average permeability as determined by detailed calculation is less than that given by the formula, the detailed calculated value may be used. For the purpose of such calculation, the permeability of passenger spaces shall be taken as 95, that of all cargo, coal and store spaces as 60, and that of double bottom, oil fuel and other tanks at such value as may be approved by the Chief Surveyor in each case.

(5) The uniform average permeability throughout the portion of the ship forward of or abaft the machinery space shall be determined from the formula:

$$63 + 35 \frac{a}{v}$$

where: a = the volume of the passenger spaces as defined in clause 1 of this Code, which are situated below the margin line, forward of or abaft the machinery space; and
 v = the whole volume of the portion of the ship below the margin line forward of or abaft the machinery space.

(6) In the case of unusual arrangements the Chief Surveyor may allow, or require, a detailed calculation of average permeability for the portions forward of or abaft the machinery space. For the purpose of such calculation, the permeability of passenger spaces shall be taken as 95, that of spaces containing machinery as 85, that of all cargo, coal and store spaces as 60, and that of double bottom, oil fuel and other tanks at such value as may be approved by the Chief Surveyor in each case.

(7) Where a between-deck compartment between two watertight transverse bulkheads contains any passenger or crew space, the whole of that compartment, less any space completely enclosed within permanent steel bulkheads and appropriated to other purposes, shall be regarded as passenger space. Where, however, the passenger or crew space in question is completely enclosed within permanent steel bulkheads, only the space so enclosed need be considered as passenger space.

7. Permissible Length of Compartments—Ships shall be as efficiently subdivided as is possible having regard to the nature

of the service for which they are intended. The degree of subdivision shall vary with the length of the ship and with the nature of the service, such that the highest degree of subdivision corresponds with ships of greatest length primarily engaged in the carriage of passengers.

(1) Factor of subdivision

(a) The maximum permissible length of a compartment having its centre at any point in the ship's length is obtained from the floodable length by multiplying the latter by an appropriate factor called the factor of subdivision.

(b) The factor of subdivision shall depend on the length of the ship, and for a given length shall vary according to the nature of the service for which the ship is intended. It shall decrease in a regular and continuous manner—

(i) as the length of the ship increases, and

(ii) from a factor A, applicable to ships primarily engaged in the carriage of cargo, to a factor B, applicable to ships primarily engaged in the carriage of passengers.

(c) The variations of factors A and B shall be expressed by the following formulae F1 and F2 where L is the length of the ship as defined in clause 1.

$$A = \frac{58.2}{L - 60} + .18(L = 131\text{m and upwards}) \quad \text{F1}$$

$$B = \frac{30.3}{L - 42} + .18(L = 79\text{m and upwards}) \quad \text{F2}$$

(2) Criterion of Service

(a) For a ship of given length the appropriate factor of subdivision shall be determined by the criterion of service numeral (hereinafter called the criterion numeral) as given by the following formulae F3 and F4 where:

C_s = the criterion numeral;
 L = the length of the ship (metres),
 M = the volume of the machinery space (cubic metres), with the addition thereto of the volume of any permanent oil fuel bunkers which may be situated above the inner bottom and forward of or abaft the machinery space;
 P = the whole volume of the passenger spaces below the margin line (cubic metres),
 V = the whole volume of the ship below the margin line (cubic metres);
 P_1 = KN where:
 N = the number of passengers for which the ship is to be certified, and
 K = 0.056L

Where the value of KN is greater than the sum of P and the whole volume of the actual passenger spaces above the margin line, the figure to be taken as P_1 is that sum or two-thirds KN, whichever is the greater.

When P_1 is greater than P—

$$C_s = 72 \frac{M + 2P_1}{V + P_1 - P} \quad \text{F3}$$

and in other cases—

$$C_s = 72 \frac{M + 2P}{V} \quad \text{F4}$$

For ships not having a continuous bulkhead deck the volumes are to be taken up to the actual margin lines used in determining the floodable lengths.

(3) Rules for Subdivision of Ships

(a) The subdivision abaft the forepeak of ships of 131m in length and upwards having a criterion numeral of 23 or less shall be governed by the factor A given by formula F1; of those having a criterion numeral of 123 or more by the factor B given by formula F2; and of those having a criterion numeral between 23 and 123 by the factor F obtained by linear interpolation between the factors A and B, using the formula:

$$F = A - \frac{(A - B)(C_s - 23)}{100} \quad \text{F5}$$

Nevertheless, where the criterion numeral is equal to 45 or more and simultaneously the computed factor of subdivision as given by formula F5 is .65 or less, but more than .50, the subdivision abaft the forepeak shall be governed by the factor .50.

(b) Where the factor F is less than .40 and it is shown to the satisfaction of the Chief Surveyor to be impracticable to comply with the factor F in a machinery compartment of the ship, the subdivision of such compartment may be governed by an increased factor, which, however, shall not exceed .40.

(c) The subdivision abaft the forepeak of ships of less than 131m but not less than 79m in length having a criterion numeral equal to S, where:

$$S = \frac{3,574 - 25L}{13}$$

shall be governed by the factor unity; of those having a criterion numeral of 123 or more by the factor B given by the formula F2; of those having a criterion numeral between S and 123 by the factor F obtained by linear interpolation between unity and the factor B using the formula:

$$F = 1 - \frac{(1 - B)(C_s - S)}{123 - S}$$

(d) The subdivision abaft the forepeak of ships of less than 131m but not less than 79m in length and having a criterion numeral less than S, and of ships of less than 79m in length shall be governed by the factor unity, unless, in either case, it is shown to the satisfaction of the Chief Surveyor to be impracticable to comply with this factor in any part of the ship, in which case, the Chief Surveyor may allow such relaxation as may appear to be justified, having regard to all the circumstances.

(e) The provisions of sub-clause (3)(d) of this clause shall apply also to ships of whatever length, which are to be certified to carry a number of passengers exceeding 12 but not exceeding—

$$\frac{L^2}{650} \text{ or } 50, \text{ whichever is the less.}$$

8. Special Requirements Concerning Subdivision—(1)

Where in a portion or portions of a ship the watertight bulkheads are carried to a higher deck than in the remainder of the ship and it is desired to take advantage of this higher extension of the bulkheads in calculating the floodable length, separate margin lines may be used for each such portion of the ship provided that:

(a) the sides of the ship are extended throughout the ship's length to the deck corresponding to the upper margin line and all openings in the shell plating below this deck throughout the length of the ship are treated as being below a margin line, for the purposes of Clause 14 of this Code and

(b) the two compartments adjacent to the "step" in the bulkhead deck are each within the permissible length corresponding to their respective margin lines, and, in addition, their combined length does not exceed twice the permissible length based on the lower margin line.

(2) A compartment may exceed the permissible length determined by Clause 7 of this Code provided the combined length of each pair of adjacent compartments shall be adjusted to the mean average permeability of the two portions of the ship in which the compartments are situated.

(3) Where the two adjacent compartments have different factors of subdivision, the combined length of the two compartments shall be determined proportionately.

(4) In ships of 100m in length and upwards, one of the main transverse bulkheads abaft the forepeak shall be fitted at a distance from the forward perpendicular which is not greater than the permissible length.

(5) A main transverse bulkhead may be recessed provided that all parts of the recess lie inboard of vertical surfaces on both

sides of the ship, situated at a distance from the shell plating equal to one-fifth the breadth of the ship, and measured at right angles to the centreline at the level of the deepest subdivision load line. Any part of a recess which lies outside these limits shall be dealt with as a step in accordance with sub-clause 6 of this clause.

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

(a) the combined length of the two compartments, separated by the bulkhead in question, does not exceed either 90 per cent of the floodable length or twice the permissible length, except that, in ships having a factor of subdivision greater than .9, the combined length of the two compartments in question shall not exceed the permissible length;

(b) additional subdivision is provided in way of the step to maintain the same measure of safety as that secured by a plane bulkhead;

(c) the compartment over which the step extends does not exceed the permissible length corresponding to a margin line taken 76mm below the step.

(7) Where a main transverse bulkhead is recessed or stepped, an equivalent plane bulkhead shall be used in determining the subdivision.

(8) If the distance between two adjacent main transverse bulkheads, or their equivalent plane bulkheads, or the distance between the transverse planes passing through the nearest stepped portions of the bulkheads, is less than 3.0m plus 3 per cent of the length of the ship, or 11.0m whichever is the less, only one of these bulkheads shall be regarded as forming part of the subdivision of the ship in accordance with the provisions of clause 7 of this Code.

(9) Where a main transverse watertight compartment contains local subdivision and it can be shown to the satisfaction of the Chief Surveyor that, after any assumed side damage extending over a length of 3.0m plus 3 per cent of the length of the ship, or 11.0m whichever is the less, the whole volume of the main compartment will not be flooded, a proportionate allowance may be made in the permissible length otherwise required for such compartment. In such a case the volume of effective buoyancy assumed on the undamaged side shall not be greater than that assumed on the damaged side.

(10) Where the required factor of subdivision is .50 or less, the combined length of any two adjacent compartments shall not exceed the floodable length.

9. Peak and Machinery Space Bulkheads, Shaft Tunnels etc—(1)

A forepeak or collision bulkhead shall be fitted which shall be watertight up to the bulkhead deck. This bulkhead shall be located at a distance from the forward perpendicular of not less than 5 per cent of the length of the ship and not more than 3m plus 5 per cent of the length of the ship.

(2) Where any part of the ship below the waterline extends forward of the forward perpendicular, e.g. a bulbous bow, the distances stipulated above shall be measured from a point either:

(a) at the mid-length of such extension; or

(b) at a distance 1.5 per cent of the length of the ship forward of the forward perpendicular; or

(c) at a distance 3m forward of the forward perpendicular; whichever gives the smallest measurement.

(3) Where a long forward superstructure is fitted, the forepeak or collision bulkhead shall be extended weathertight to the deck next above the bulkhead deck. The extension need not be fitted directly above the bulkhead below provided it is located within the limits specified in sub-clauses (1) or (2) of this clause with the exemption permitted by sub-clause (4) of this clause and the part of the deck which forms the step is made effectively weathertight.

(4) Where bow doors are fitted and a sloping loading ramp

forms part of the extension of the collision bulkhead above the bulkhead deck the part of the ramp which is more than 2.3m above the bulkhead deck may extend forward of the limit specified above. The ramp shall be weathertight over its complete length.

(5) An afterpeak bulkhead, and bulkheads dividing the machinery space, from the cargo and passenger spaces forward and aft, shall also be fitted and made watertight up to the bulkhead deck. The afterpeak bulkhead may, however, be stepped below the bulkhead deck, provided the degree of safety of the ship as regards the subdivision is not thereby diminished.

(6) In all cases stern tubes shall be enclosed in watertight spaces of moderate volume. The stern gland shall be situated in a watertight shaft tunnel or other watertight space separate from the stern tube compartment and of such volume that, if flooded by leakage through the stern gland, the margin line will not be submerged.

10. Double Bottoms—(1) A double bottom shall be fitted extending from the forepeak bulkhead to the afterpeak bulkhead as far as this is practicable and compatible with the design and proper working of the ship.

(a) In ships of 50m and upwards but less than 61m in length a double bottom shall be fitted at least from the machinery space to the forepeak bulkhead, or as near thereto as practicable.

(b) In ships of 61m and upwards but less than 76m in length a double bottom shall be fitted at least outside the machinery space, and shall extend to the fore and after peak bulkheads, or as near thereto as practicable.

(c) In ships of 76m in length and upwards, a double bottom shall be fitted amidships, and shall extend to the fore and after peak bulkheads, or as near thereto as practicable.

(2) Where a double bottom is required to be fitted its depth shall be to the satisfaction of the Chief Surveyor and the inner bottom shall be continued out to the ship's sides in such a manner as to protect the bottom to the turn of the bilge. Such protection will be deemed satisfactory if the line of intersection of the outer edge of the margin plate with the bilge plating is not lower at any part than a horizontal plane passing through the point of intersection with the frame line amidships of a transverse diagonal line inclined at 25° to the base line and cutting it at a point one-half the ship's moulded breadth from the middle line.

(3) Small wells constructed in the double bottom in connection with drainage arrangements of holds and other spaces, shall not extend downwards more than necessary. The depth of the well shall in no case be more than the depth less 460mm of the double bottom at the centreline, nor shall the well extend below the horizontal plane referred to in sub-clause (2) of this clause. A well extending to the outer bottom is, however, permitted at the after end of the shaft tunnel. Other wells (e.g., for lubricating oil under main engines) may be permitted by the Chief Surveyor if satisfied that the arrangements give protection equivalent to that afforded by a double bottom complying with this clause.

(4) A double bottom need not be fitted in way of watertight compartments of moderate size used exclusively for the carriage of liquids, provided the safety of the ship, in the event of bottom or side damage, is not, in the opinion of the Chief Surveyor thereby impaired.

11. Construction and Initial Testing of Watertight Bulkheads etc—(1) Each watertight subdivision bulkhead, whether transverse or longitudinal, shall be constructed in such a manner that it shall be capable of supporting, with a proper margin of resistance, the pressure due to the maximum head of water which it might have to sustain in the event of damage to the ship but at least the pressure due to a head of water up to the margin line. The construction of these bulkheads shall be to the satisfaction of the Chief Surveyor.

(2) Steps and recesses in bulkheads shall be watertight and as strong as the bulkhead at the place where each occurs.

(3) Where frames or beams pass through a watertight deck or bulkhead, such deck or bulkhead shall be made structurally watertight without the use of wood or cement.

(4) Testing main compartments by filling them with water is not compulsory. When testing by filling with water is not carried out, a hose test is compulsory; this test shall be carried out in the most advanced stage of the fitting out of the ship. In any case, a thorough inspection of the watertight bulkheads shall be carried out.

(5) The forepeak, double bottoms (including duct keels) and inner skins shall be tested with water to a head corresponding to the requirements of sub-clause (1) of this clause.

(6) Tanks which are intended to hold liquids, and which form part of the subdivision of the ship, shall be tested for tightness with water to a head up to the deepest subdivision load line or to a head corresponding to two-thirds of the depth from the top of keel to the margin line in way of the tanks, whichever is the greater; provided that in no case shall the test head be less than 0.9m above the top of the tank.

(7) The tests referred to in sub-clauses (5) and (6) of this clause are for the purpose of ensuring that the subdivision structural arrangements are watertight and are not to be regarded as a test of the fitness of any compartment for the storage of oil fuel or for other special purposes for which a test of a superior character may be required depending on the height to which the liquid has access in the tank or its connections.

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

(2) Where pipes, scuppers, electric cables or other similar fittings are carried through watertight subdivision bulkheads, arrangements shall be made to ensure the watertight integrity of the bulkheads.

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

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

(5) No doors, manholes, or access openings are permitted:

(a) in the collision bulkhead below the margin line;

(b) in watertight transverse bulkheads dividing a cargo space from an adjoining cargo space or from a permanent or reserve bunker, except as provided in sub-clause (25) of this clause and in clause 13 of this Code.

(6) Except as provided in sub-clause (7) of this clause the collision bulkhead may be pierced below the margin line by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screwdown valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead.

(7) If the forepeak is divided to hold two different kinds of liquids the Chief Surveyor may allow the collision bulkhead to be pierced below the margin line by two pipes, each of which is fitted as required by sub-clause (6) of this clause provided the Chief Surveyor is satisfied there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the ship is maintained.

(8) Watertight doors fitted in bulkheads between permanent and reserve bunkers shall be always accessible, except as

provided in sub-clause (24) of this clause for between-deck bunker doors.

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

(10) Within spaces containing the main and auxiliary propulsion machinery including boilers serving the needs of propulsion and all permanent bunkers, not more than one door apart from the doors to bunkers and shaft tunnels may be fitted in each main transverse bulkhead. Where two or more shafts are fitted the tunnels shall be connected by an intercommunicating passage. There shall be only one door between the machinery space and the tunnel spaces where two shafts are fitted and only two doors where there are more than two shafts. All these doors shall be of the sliding type and shall be so located as to have their sills as high as practicable. The hand gear for operating these doors from above the bulkhead deck shall be situated outside the spaces containing the machinery if this is consistent with a satisfactory arrangement of the necessary gearing.

(11) Watertight doors shall be sliding doors or hinged doors or doors of an equivalent type. Plate doors secured only by bolts and doors required to be closed by dropping or by the action of a dropping weight are not permitted.

(12) Sliding doors may be either:

hand-operated only, or

power-operated as well as hand-operated.

(13) Approved watertight doors may therefore be divided into three classes:

class 1—hinged doors;

class 2—hand-operated sliding doors;

class 3—sliding doors which are power-operated as well as hand-operated.

(14) The means of operation of any watertight door whether power-operated or not shall be capable of closing the door with the ship listed to 15° either way.

(15) In all classes of watertight doors indicators shall be fitted which show, at all operating stations from which the doors are not visible, whether the doors are open or closed. If any of the watertight doors, of whatever class, is not fitted so as to enable it to be closed from a central control station, it shall be provided with a mechanical, electrical, telephonic, or any other suitable direct means of communication, enabling the officer of the watch promptly to contact the person who is responsible for closing the door in question, under previous orders.

(16) Hinged doors (class 1) shall be fitted with quick action closing devices, such as catches, workable from each side of the bulkhead.

(17) Hand-operated sliding doors (class 2) may have a horizontal or vertical motion. It shall be possible to operate the mechanism at the door itself from either side, and in addition, from an accessible position above the bulkhead deck, with an all round crank motion, or some other movement providing the same guarantee of safety and of an approved type. Departures from the requirement of operation on both sides may be allowed, if this requirement is impossible owing to the layout of the spaces. When operating a hand gear the time necessary for the complete closure of the door with the vessel upright, shall not exceed 90 seconds.

(18) Power-operated sliding doors (class 3) may have a horizontal or vertical motion. If a door is required to be power-operated from a central control, the gearing shall be so arranged that the door can be operated by power also at the door itself from both sides. The arrangement shall be such that the door will close automatically if opened by local control after being closed from the central control, and also such that any door can be kept closed by local systems which will

prevent the door from being opened from the upper control. Local control handles in connection with the power gear shall be provided each side of the bulkhead and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the closing mechanism in operation accidentally. Power-operated sliding doors shall be provided with hand gear workable at the door itself on either side and from an accessible position above the bulkhead deck, with an all round crank motion or some other movement providing the same guarantee of safety and of an approved type. Provision shall be made to give warnings by sound signal that the door has begun to close and will continue to move until it is completely closed. The door shall take a sufficient time to close to ensure safety.

(19) There shall be at least two independent power sources capable of opening and closing all the doors under control, each of them capable of operating all the doors simultaneously. The two power sources shall be controlled from the central station on the navigating bridge provided with all the necessary indicators for checking that each of the two power sources is capable of giving the required service satisfactorily.

(20) In the case of hydraulic operation, each power source shall consist of a pump capable of closing all doors in not more than 60 seconds. In addition, there shall be for the whole installation hydraulic accumulators of sufficient capacity to operate all the doors at least three times, i.e. closed-open-closed. The fluid used shall be one which does not freeze at any of the temperatures liable to be encountered by the ship during its service.

(21) Hinged watertight doors (class 1) in passenger, crew and working spaces are only permitted above a deck the underside of which, at its lowest point at side, is at least 2.0m above the deepest subdivision load line.

(22) Watertight doors, the sills of which are above the deepest load line and below the line specified in the previous sub-clause shall be sliding doors and may be hand-operated (class 2). When trunkways in connection with refrigerated cargo and ventilation or forced draught ducts are carried through more than one main watertight subdivision bulkhead, the doors at such openings shall be operated by power.

(23) Watertight doors which may sometimes be opened at sea, and the sills of which are below the deepest subdivision load line shall be sliding doors. The following rules shall apply:

(a) when the number of such doors (excluding doors at entrances to shaft tunnels) exceeds five, all of these doors and those at the entrance to shaft tunnels or ventilation or forced draught ducts, shall be power-operated (class 3) and shall be capable of being simultaneously closed from a central station situated on the navigating bridge;

(b) when the number of such doors (excluding doors at entrances to shaft tunnels) is greater than one, but does not exceed five;

(i) where the ship has no passenger spaces below the bulkhead deck, all the above-mentioned doors may be hand-operated (class 2);

(ii) where the ship has passenger spaces below the bulkhead deck all the above-mentioned doors shall be power-operated (class 3) and shall be capable of being simultaneously closed from a central station situated on the navigating bridge;

(iii) in any ship where there are only two such watertight doors and they are situated in the machinery space or in the bulkheads bounding such space, the Chief Surveyor may allow these two doors to be hand-operated only (class 2).

(24) If sliding watertight doors which have sometimes to be open at sea for the purpose of trimming coal are fitted between bunkers in the between-decks below the bulkhead deck, these doors shall be operated by power.

(25) If the Chief Surveyor is satisfied that such doors are

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

(26) Should any such door be accessible during the voyage, it shall be fitted with a device which prevents unauthorised opening. When it is proposed to fit such doors, the number and arrangements shall receive the special consideration of the Chief Surveyor.

(27) Portable plates on bulkheads shall not be permitted except in machinery spaces.

(28) Where trunkways or tunnels for access from crew accommodation to the stokehold, for piping, or for any other purpose are carried through main transverse watertight bulkheads, they shall be watertight and in accordance with the requirements of clause 18 of this Code. The access to at least one end of each such tunnel or trunkway, if used as a passage at sea, shall be through a trunk extending watertight to a height sufficient to permit access above the margin line. The access to the other end of the trunkway or tunnel may be through a watertight door of the type required by its location in the ship. Such trunkways or tunnels shall not extend through the first subdivision bulkhead abaft the collision bulkhead.

(29) Where it is proposed to fit tunnels or trunkways for forced draught, piercing main transverse watertight bulkheads, these shall receive the special consideration of the Chief Surveyor.

13. Ships Carrying Goods Vehicles and Accompanying Personnel—(1) This clause applies to passenger ships regardless of the date of construction designed or adapted for the carriage of goods vehicles and accompanying personnel where the total number of passengers exceeds 12.

(2) If in such a ship the total number of passengers which include personnel accompanying vehicles does not exceed $N = 12 + A/25$, where $A =$ total deck area (square metres) of spaces available for the stowage of goods vehicles and where the clear height at the stowage position and at the entrance to such spaces is not less than 4m, the provisions of clause 12 sub-clause (25) of this Code apply except that the doors may be fitted at any level in such watertight bulkheads. Additionally, indicators are required on the navigating bridge to show automatically when each door is closed and all door fastenings are secured.

(3) When applying the provisions of this Code to such a ship, N shall be taken as the maximum number of passengers for which the ship may be certified in accordance with this clause.

(4) In applying clause 25 of this Code for the worst operating conditions, the permeability for cargo spaces intended for the stowage of goods vehicles and containers shall be derived by calculation in which the goods vehicles and containers shall be assumed to be non-watertight and their permeability taken as 65. For ships engaged in dedicated services the actual value of permeability for goods vehicles or containers may be applied. In no case shall the permeability of the cargo spaces in which the goods vehicles and containers are carried be taken as less than 60.

14. Openings in the Shell Plating Below the Margin Line—

(1) The number of openings in the shell plating shall be reduced to the minimum compatible with the design and proper working of the ship.

(2) The arrangement and efficiency of the means for closing any opening in the shell plating shall be consistent with its intended purpose and the position in which it is fitted and generally to the satisfaction of the Chief Surveyor.

(3) Subject to the requirements of the Load Line Rules 1970, no sidescuttle shall be fitted in such a position that its sill is below a line drawn parallel to the bulkhead deck at side and having its lowest point 2.5 per cent of the breadth of the ship above the deepest subdivision load line, or 500mm, whichever is the greater.

(4) All sidescuttles the sills of which are below the margin line, as permitted by sub-clause (3) of this clause shall be of such construction as will effectively prevent any person opening them without the consent of the master of the ship.

(5) Efficient hinged inside deadlights so arranged that they can be easily and effectively closed and secured watertight, shall be fitted to all sidescuttles except that abaft one eighth of the ship's length from the forward perpendicular and above a line drawn parallel to the bulkhead deck at side and having its lowest point at a height of 3.7m plus 2.5 per cent of the breadth of the ship above the deepest subdivision load line, the deadlights may be portable in passenger accommodation other than that for steerage passengers, unless the deadlights are required by the Load Line Rules 1970 to be permanently attached in their proper positions. Such portable deadlights shall be stowed adjacent to the sidescuttles they serve.

(6) No sidescuttles shall be fitted in any spaces which are appropriated exclusively to the carriage of cargo or coal.

(7) Sidescuttles may, however, be fitted in spaces appropriated alternatively to the carriage of cargo or passengers, but they shall be of such construction as will effectively prevent any person opening them or their deadlights without the consent of the master.

(8) Automatic ventilating sidescuttles shall not be fitted in the shell plating below the margin line without the special sanction of the Chief Surveyor.

(9) The number of scuppers, sanitary discharges and other similar openings in the shell plating shall be reduced to the minimum either by making each discharge serve for as many as possible of the sanitary and other pipes, or in any other satisfactory manner.

(10) All inlets and discharges in the shell plating shall be fitted with efficient and accessible arrangements for preventing the accidental admission of water into the ship.

(11) Subject to the requirements of the Load Line Rules 1970, and except as provided by sub-clause (13) of this clause, each separate discharge led through the shell plating from spaces below the margin line shall be provided with either one automatic non-return valve fitted with a positive means of closing it from above the bulkhead deck or with two automatic non-return valves without positive means of closing, provided that the inboard valve is situated above the deepest subdivision load line and is always accessible for examination under service conditions. Where a valve with positive means of closing is fitted, the operating position above the bulkhead deck shall always be readily accessible and means shall be provided for indicating whether the valve is open or closed.

(12) The requirements of the Load Line Rules 1970 shall apply to discharges led through the shell plating from spaces above the margin line.

(13) Machinery space main and auxiliary sea inlets and discharges in connection with the operation of machinery shall be fitted with readily accessible valves between the pipes and the shell plating or between the pipes and fabricated boxes attached to the shell plating. The valves may be controlled locally and shall be provided with indicators showing whether they are open or closed.

(14) All shell fittings and valves required by this clause shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. All pipes to which this regulation refers shall be of steel or other equivalent material to the satisfaction of the Chief Surveyor.

(15) Gangway, cargo and coaling ports fitted below the margin

line shall be of sufficient strength. They shall be capable of being effectively closed and secured watertight.

(16) Such ports shall in no case be so fitted as to have their lowest point below the deepest subdivision load line.

(17) The inboard opening of each ash-chute, rubbish-chute, etc shall be fitted with an efficient cover.

(18) If the inboard opening is situated below the margin line, the cover shall be watertight, and in addition an automatic nonreturn valve shall be fitted in the chute in an easily accessible position above the deepest subdivision load line. When the chute is not in use both the cover and the valve shall be kept closed and secured.

15. Watertight Integrity Above the Margin Line—(1) The Chief Surveyor may require that all reasonable and practicable measures shall be taken to limit the entry and spread of water above the bulkhead deck. Such measures may include partial bulkheads or webs. When partial watertight bulkheads or webs are fitted on the bulkhead deck, above or in the immediate vicinity of main subdivision bulkheads, they shall have watertight shell and bulkhead deck connections so as to restrict the flow of water along the deck when the ship is in a heeled damaged condition. Where the partial watertight bulkhead does not line up with the bulkhead below, the bulkhead deck between shall be made effectively watertight.

(2) The bulkhead deck or a deck above it shall be weathertight. All openings in the exposed weather deck shall have coamings of ample height and strength and shall be provided with efficient means for expeditiously closing them weathertight. Freeing ports, open rails and scuppers shall be fitted as necessary for rapidly clearing the weather deck of water under all weather conditions.

(3) Sidescuttles, gangway, cargo and coaling ports and other means for closing openings in the shell plating above the margin line shall be of efficient design and construction and of sufficient strength having regard to the spaces in which they are fitted and their positions relative to the deepest subdivision load line.

(4) Efficient inside deadlights, so arranged that they can be easily and effectively closed and secured watertight, shall be provided for all sidescuttles to spaces below the first deck above the bulkhead deck.

16. Integrity of the Hull and Superstructure, Damage Prevention and Control—(1) Every passenger ship with ro-ro cargo spaces or special category spaces shall be provided with indicators on the navigating bridge for all shell doors, loading doors and other closing appliances which, if left open or not properly secured could, in the opinion of the Chief Surveyor, lead to major flooding of a special category space or ro-ro cargo space. The indicator system shall be designed on the fail safe principle and shall show if the door is not fully closed or not secured. The power supply for the indicator system shall be independent of the power supply for operating and securing the doors.

(2) Means shall be arranged, such as television surveillance or a water leakage detection system, to provide an indication to the navigating bridge of any leakage through bow doors, stern doors or any other cargo or vehicle loading doors which could lead to major flooding of special category spaces or ro-ro spaces.

(3) Special category spaces and ro-ro cargo spaces shall either be patrolled or monitored by effective means, such as television surveillance, so that movement of vehicles in adverse weather and unauthorised access by passengers can be observed whilst the ship is underway.

17. Construction and Initial Tests of Watertight Doors, Sidescuttles etc.—(1) The design, materials and construction of all watertight doors, sidescuttles, gangway, cargo and coaling ports, valves, pipes, ash-chutes and rubbish-chutes

referred to in in this Code shall be to the satisfaction of the Chief Surveyor.

(2) The frames of vertical watertight doors shall have no groove at the bottom in which dirt might lodge and prevent the door closing properly.

(3) Each watertight door shall be tested by water pressure to a head up to the bulkhead deck or freeboard deck respectively. The test shall be made before the ship is put into service, either before or after the door is fitted.

18. Construction and Initial Tests of Watertight Decks, Trunks, etc—(1) Watertight decks, trunks, tunnels, duct keels and ventilators shall be of the same strength as watertight bulkheads at corresponding levels. The means used for making them watertight, and the arrangements adopted for closing openings in them, shall be to the satisfaction of the Chief Surveyor. Watertight ventilators and trunks shall be carried at least up to the bulkhead deck in passenger ships and up to the freeboard deck in cargo ships.

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

19. Subdivision Load Lines—(1) In order that the required degree of subdivision shall be maintained, a load line corresponding to the approved subdivision draught shall be assigned and marked on the ship's sides. A ship having spaces which are specially adapted for the accommodation of passengers and the carriage of cargo alternatively may, if the owners desire, have one or more additional load lines assigned and marked to correspond with the subdivision draughts which the Chief Surveyor may approve for the alternative service conditions.

(2) The subdivision load lines assigned and marked shall be recorded in the Passenger Ship Safety Certificate, and shall be distinguished by the notation C.1 for the principal passenger condition, and C.2, C.3, etc., for the alternative conditions.

(3) The freeboard corresponding to each of these load lines shall be measured at the same position and from the same deck line as the freeboards determined in accordance with the Load Line Rules 1970.

(4) The freeboard corresponding to each approved subdivision load line and the conditions of service for which it is approved, shall be clearly indicated on the Passenger Ship Safety Certificate.

(5) In no case shall any subdivision load line mark be placed above the deepest load line in salt water as determined by the strength of the ship or the Load Line Rules 1970.

(6) Whatever may be the position of the subdivision load line marks, a ship shall in no case be loaded so as to submerge the load line mark appropriate to the season and locality as determined in accordance with the Load Line Rules 1970.

(7) A ship shall in no case be so loaded that when it is in salt water the subdivision load line mark appropriate to the particular voyage and condition of service is submerged.

(8) The marks and identifying letters shall be painted in white or yellow on a dark background or in black on a light background and shall be cut in, or centre punched, or indicated by welded bead, or such other method acceptable to the Chief Surveyor.

SECTION B—CARGO SHIP SUBDIVISION—

20. Collision Bulkhead—(1) For the purpose of this clause "freeboard deck", "length of ship" and "forward perpendicular" have the meanings as defined in the Load Line Rules 1970.

(2) A collision bulkhead shall be fitted which shall be watertight up to the freeboard deck. This bulkhead shall be located at a distance from the forward perpendicular of not less than 5 per cent of the length of the ship or 10m, whichever is the less, and, except as may be permitted by the

Chief Surveyor not more than 8 per cent of the length of the ship.

(3) Where any part of the ship below the waterline extends forward of the forward perpendicular, e.g. a bulbous bow, the distances stipulated in sub-clause (2) of this clause shall be measured from a point either:

- (a) at the mid-length of such extension; or
- (b) at a distance 1.5 per cent of the length of the ship forward of the forward perpendicular; or
- (c) at a distance 3m forward of the forward perpendicular; whichever gives the smallest measurement.

(4) The bulkhead may have steps or recesses provided they are within the limits prescribed in sub-clauses (2) or (3) of this clause. Pipes piercing the collision bulkhead shall be fitted with suitable valves operable from above the freeboard deck and the valve chest shall be secured at the bulkhead inside the forepeak. The valves may be fitted on the after side of the collision bulkhead provided that the valves are readily accessible under all service conditions and the space in which they are located is not a cargo space. All valves shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. No door, manhole, ventilation duct or any other opening shall be fitted in this bulkhead.

(5) Where a long forward superstructure is fitted the collision bulkhead shall be extended weathertight to the deck next above the freeboard deck. The extension need not be fitted directly above the bulkhead below provided it is located within the limits prescribed in sub-clauses (2) or (3) of this clause with the exemption permitted by sub-clause (6) of this clause, and the part of the deck which forms the step is made effectively weathertight.

(6) Where bow doors are fitted and a sloping loading ramp forms part of the extension of the collision bulkhead above the freeboard deck the part of the ramp which is more than 2.3m above the freeboard deck may extend forward of the limit specified in sub-clauses (2) or (3) of this clause. The ramp shall be weathertight over its complete length.

(7) The number of openings in the extension of the collision bulkhead above the freeboard deck shall be restricted to the minimum compatible with the design and normal operation of the ship. All such openings shall be capable of being closed weathertight.

21. Construction and Initial Testing of Watertight Bulkheads—(1) The requirements of clause 11 of this Code apply to the construction and initial testing of watertight bulkheads for cargo ships.

22. Construction and Initial Testing of Watertight Doors—

(1) Each watertight door shall be tested by water pressure to a head up to the bulkhead deck or freeboard deck respectively. The test shall be made before the ship is put into service, either before or after the door is fitted.

23. Construction and Initial Testing of Watertight Decks, Trunks, etc.—(1) The requirements of clause 18 of this Code apply to the construction and initial testing of watertight decks, trunks, tunnels, duct keels and ventilators for cargo ships.

SECTION C—STABILITY—

24. Stability Information for Passenger Ships and Cargo Ships—(1) Every ship to which this Code applies, shall be inclined upon its completion and the elements of its stability determined. Stability information in the form required by Rule 32 of the Load Line Rules 1970 shall be supplied to the Master of every ship to which this Code applies.

(2) Where any alterations are made to a ship so as to materially affect the stability information supplied to the Master, amended stability information shall be provided. If necessary the ship shall be re-inclined.

(3) The Chief Surveyor may allow the inclining test of an individual ship to be dispensed with provided basic stability data are available from the inclining test of a sister ship and it is shown to the satisfaction of the Chief Surveyor that reliable stability information for the exempted ship can be obtained from such basic data.

(4) The Chief Surveyor may also allow the inclining test of an individual ship or class of ships especially designed for the carriage of liquids or ore in bulk to be dispensed with when reference to existing data for similar ships clearly indicates that due to the ship's proportions and arrangements more than sufficient metacentric height will be available in all probable loading conditions.

(5) Every ro-ro passenger ship of Class I or II if engaged in services which afford only short periods in port shall be provided with an on board loading and stability computer approved by the Chief Surveyor, unless either of the following means, approved by the Chief Surveyor, are provided for calculating the vessel's stability prior to departure.

(a) A shore based loading and stability computer system with means of rapidly transmitting the stability condition to the ship.

(b) Other means of rapidly calculating the stability condition of the ship are carried on board.

25. Stability of Passenger Ships in Damaged Condition—

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

(2) Where two adjacent main compartments are separated by a bulkhead which is stepped under the conditions of clause 8 of this Code, the intact stability shall be adequate to withstand the flooding of those two adjacent main compartments.

(3) Where the required factor of subdivision is .50 or less but more than .33 intact stability shall be adequate to withstand the flooding of any two adjacent main compartments.

(4) Where the required factor of subdivision is .33 or less the intact stability shall be adequate to withstand the flooding of any three adjacent main compartments.

(5) The requirements of sub-clause (1) of this clause shall be determined by calculations which are in accordance with sub-clauses (7), (8), (9) and (10) of this clause and which take into consideration the proportions and design characteristics of the ship and the arrangement and configuration of the damaged compartments. In making these calculations the ship is to be assumed in the worst anticipated service condition as regards stability.

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

(7) The stability required in the final condition after damage, and after equalisation where provided, shall be determined as follows:

(a) The positive residual righting lever curve shall have a minimum range of 15° beyond the angle of equilibrium.

(b) The area under the righting lever curve shall be at least 0.015 m-rad, measured from the angle of equilibrium to the lesser of:

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

(c) A residual righting lever is to be obtained within the range specified in (a), taking into account the greatest of the following heeling moments:

- (i) the crowding of all passengers towards one side;
- (ii) the launching of all fully loaded davit-launched survival craft on one side;
- (iii) due to wind pressure as calculated by the formula:

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

However, in no case is this righting lever to be less than 0.10m.

(d) For the purpose of calculating the heeling moments in paragraph (c) the following assumptions shall be made:

(i) Moments due to crowding of passengers:

- 1 4 persons per square metre;
- 2 a mass of 75 kg for each passenger;
- 3 passengers shall be distributed on available deck areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment.

(ii) Moments due to launching of all fully loaded davit-launched survival craft on one side:

- 1 all lifeboats and rescue boats fitted on the side to which the ship was heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;
- 2 for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;
- 3 a fully loaded davit-launched liferaft attached to each davit on the side to which the ship was heeled after having sustained damage shall be assumed to be swung out ready for lowering;
- 4 persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;
- 5 life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position.

(iii) Moments due to wind pressure:

- 1 a wind pressure of 120 N/m² to be applied;
- 2 the area applicable shall be the projected lateral areas of the ship above the waterline corresponding to the intact condition;
- 3 the moment arm shall be the vertical distance from a point at one half of the mean draught corresponding to the intact condition to the centre of gravity of the lateral area.

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

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

Spaces	Permeability
Appropriated to cargo, coal or stores	60
Occupied by accommodation	95
Occupied by machinery	85
Intended for liquids	0 or 95*

* Whichever results in the more severe requirements

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

(10) Assumed extent of damage shall be as follows:

- (a) longitudinal extent: 3.0m plus 3 per cent of the length of

the ship, or 11.0m whichever is the less. Where the required factor of subdivision is .33 or less the assumed longitudinal extent of damage shall be increased as necessary so as to include any two consecutive main transverse watertight bulkheads;

(b) transverse extent (measured inboard from the ship's side, at right angles to the centreline at the level of the deepest subdivision load line): a distance of one fifth of the breadth of the ship, and

(c) vertical extent: from the base line upwards without limit;

(d) if any damage of lesser extent than that indicated in paragraphs (a), (b) and (c) above would result in a more severe condition regarding heel or loss of metacentric height, such damage shall be assumed in the calculations.

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

(12) The final conditions of the ship after damage and, in the case of unsymmetrical flooding, after equalisation measures have been taken shall be as follows:

(a) in the case of symmetrical flooding there shall be a positive residual metacentric height of at least 50mm as calculated by the constant displacement method;

(b) in the case of unsymmetrical flooding, the angle of heel for one-compartment flooding shall not exceed 7°. For the simultaneous flooding of two or more adjacent compartments, a heel of 12° may be permitted by the Chief Surveyor.

(c) in no case shall the margin line be submerged in the final stage of flooding. If it is considered that the margin line may become submerged during an intermediate stage of flooding, the Chief Surveyor may require such investigations and arrangements as he considers necessary for the safety of the ship.

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

(14) The data referred to in sub-clause (13) of this clause, to enable the master to maintain sufficient intact stability, shall include information which indicates the maximum permissible height of the ship's centre of gravity above keel (KG), or alternatively the minimum permissible metacentric height (GM) for a range of draughts or displacements sufficient to include all service conditions. The information shall show the influence of various trims taking into account the operational limits.

(15) Each ship shall have scales of draughts marked clearly at the bow and stern. In the case where the draught marks are not located where they are easily readable, or operational constraints for a particular trade make it difficult to read the draft marks, then the ship shall also be fitted with a reliable draught indicating system by which the bow and stern draughts can be determined. Every ro-ro passenger ship of Class I or II shall be provided with a reliable automatic draught gauge system.

(16) No relaxation from the requirements for damage stability

may be considered by the Chief Surveyor unless it is shown that the intact metacentric height in any service condition necessary to meet these requirements is excessive for the service intended.

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

26. Passenger Ship Light Weight Survey—(1) At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the stability information approved under Rule 32(5) of the Load Line Rules 1970, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of *L* is found, or anticipated.

(2) A report of each lightweight survey carried out in accordance with sub-clause (1) of this clause shall be submitted to the Chief Surveyor.

27. Damage Control Plans in Passenger Ships—(1) There shall be permanently exhibited, for the guidance of the officer in charge of the ship, plans showing clearly for each deck and hold the boundaries of the watertight compartments, the openings therein with the means of closure and position of any controls thereof, and the arrangements for the correction of any list due to flooding. In addition, booklets containing the aforementioned information shall be made available to the officers of the ship.

PART IV

BILGE PUMPING ARRANGEMENTS

28. General—(1) An efficient bilge pumping system shall be provided capable of pumping from and draining any watertight compartment other than a space permanently appropriated for the carriage of fresh water, water ballast, oil fuel or liquid cargo and for which other efficient means of pumping are provided, under all practical conditions. Efficient means shall be provided for draining water from insulated holds.

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

(3) All pipes from the pumps for draining cargo spaces or any part of the machinery space shall be distinct from pipes which may be used for filling or emptying spaces in which water or oil is carried. All bilge suction pipes shall be of steel or other approved material of approved wall thickness. Bilge suction pipes in such a ship shall not be led through oil tanks, unless the pipes are enclosed in an oil-tight trunkway. Such pipes shall not be led through double-bottom tanks. Such pipes shall be made with flanged joints, and shall be thoroughly secured in position and protected where necessary against the risk of damage. Efficient expansion joints or bends shall be provided in each line of pipe.

(4) The internal diameter of main and branch bilge suction pipes shall be determined to the nearest 5mm calculated according to the following formulae:

$$d_m = 1.68 \sqrt{L(B+D)} + 25\text{mm}$$

$$d_b = 2.15 \sqrt{C(B+D)} + 25\text{mm}$$

where: d_m = internal diameter of the main bilge suction pipe in millimetres.

d_b = internal diameter of the branch bilge suction pipe in millimetres

L = length of ship in metres

B = breadth of ship in metres

D = moulded depth of ship to bulkhead deck in metres

C = length of compartment in metres.

No main bilge suction pipe shall be less than 65mm bore, and no branch bilge suction pipe shall be less than 50mm or need be more than 100mm bore.

(5) The bilge and ballast pumping systems shall be so arranged as to prevent water passing from the sea or from water-ballast spaces into the ship's cargo spaces or into any part of the machinery space or from one watertight compartment in the ship to another. The bilge connection to any pump which effects suction from the sea or from water-ballast spaces shall be made by means of either a non-return valve or a cock which cannot be opened at the same time to the bilges and to the sea or to the bilges and the water-ballast spaces. Valves in bilge distribution boxes shall be of a non-return type. An arrangement of lock-up valves or of blank flanges shall be provided to prevent any deep tank in such a ship being inadvertently run up from the sea when it contains cargo or pumped out through a bilge pipe when it contains water ballast, and instructions for the working of such an arrangement shall be conspicuously displayed nearby.

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

(7) Every bilge pump shall be self-priming unless efficient means of priming are provided. Every such pump, other than a pump provided for peak compartments only shall be so arranged as to be capable of drawing water from any space required by subclause (1) of this clause to be drained.

(8) Bilge suction in the machinery space and tunnel well of every ship to which these regulations apply shall be led from readily accessible mud boxes placed wherever practicable above the level of the working floor of the space. The boxes shall have straight tailpipes to the bilges and covers secured in such a manner as will permit them to be readily opened and closed. The suction ends in hold spaces and tunnel wells shall be enclosed in strum boxes having perforations approximately 10mm in diameter, and the combined area of such perforations shall be not less than twice that of the end of the suction pipe. Strum boxes shall be so constructed that they can be cleared without breaking any joint of the suction pipe.

(9) All tanks forming part of the structure of the ship and all watertight compartments, not being part of the machinery space, shall be provided with efficient sounding arrangements which shall be protected where necessary against damage. Where such arrangements consist of sounding pipes, a thick steel doubling plate shall be securely fixed below each sounding pipe for the sounding rod to strike upon. All such sounding pipes shall extend to positions above the ship's bulkhead deck, which shall at all times be readily accessible. Sounding pipes for bilges, coffer dams and double-bottom tanks, being bilges, coffer dams, and tanks situated in the machinery space, shall so extend, unless the upper ends of the pipes are accessible in ordinary circumstances and are furnished with cocks having parallel plugs with permanently secured handles so loaded that on being released they automatically close the cocks. Sounding pipes for the bilges of insulated holds shall be insulated and not less than 65mm in diameter.

29. Passenger Ships—(1) The bilge pumping system shall be capable of operation under all practicable conditions after a casualty whether the ship is upright or listed. For this purpose wing suction shall generally be fitted except in narrow compartments at the end of the ship where one suction may be sufficient. In compartments of unusual form, additional suction may be required. Arrangements shall be made whereby water in the compartment may find its way to the suction pipes. Where, for particular compartments, the Chief Surveyor is satisfied that the provision of drainage may be undesirable, he may allow such provision to be dispensed with if calculations made in accordance with the conditions laid

down in clause 25 of this Code show that the survival capability of the ship will not be impaired.

(2) At least three power pumps shall be fitted connected to the bilge main, one of which may be driven by the propulsion machinery. Where the criterion numeral is 30 or more, one additional independent power pump shall be provided.

(3) Where practicable, the power bilge pumps shall be placed in separate watertight compartments and so arranged or situated that these compartments will not be flooded by the same damage. If the main propulsion machinery, auxiliary machinery and boilers are in two or more watertight compartments, the pumps available for bilge service shall be distributed as far as is possible throughout these compartments.

(4) On a ship of 91.5m in length and upwards or having a criterion numeral of 30 or more, the arrangements shall be such that at least one power bilge pump shall be available for use in all flooding conditions which the ship is required to withstand, as follows:

(a) one of the required bilge pumps shall be an emergency pump of a reliable submersible type having a source of power situated above the bulkhead deck; or

(b) the bilge pumps and their sources of power shall be so distributed throughout the length of the ship that at least one pump in an undamaged compartment will be available.

(5) Every power bilge pump shall be capable of giving a speed of water of not less than 2 metres per second through the ship's main bilge pipe when its diameter is that determined by clause 28(4) of this Code. Every such pump shall have a direct suction from the space in which it is situated, but not more than 2 direct suctions shall be required in any one space. Every such suction shall be of a diameter not less than that of the ship's main bilge pipe. The direct suctions in the ship's machinery space shall be so arranged that water may be pumped from each side of the space through direct suctions to independent bilge pumps.

(6) In addition to the direct bilge suction or suctions required by sub-clause (5) of this clause a direct suction from the main circulating pump leading to the drainage level of the machinery space and fitted with a nonreturn valve shall be provided in the machinery space. The diameter of this direct suction pipe shall be at least two thirds of the diameter of the pump inlet in the case of steamships, and of the same diameter as the pump inlet in the case of motorships.

(7) Where in the opinion of the Chief Surveyor the main circulating pump is not suitable for this purpose, a direct emergency bilge suction shall be led from the largest available independent power driven pump to the drainage level of the machinery space; the suction shall be of the same diameter as the main inlet of the pump used. The capacity of the pump so connected shall exceed that of a required bilge pump by an amount deemed satisfactory by the Chief Surveyor.

(8) The spindles of the sea inlet and direct suction valves shall extend well above the engine-room platform.

(9) Provision shall be made to prevent the compartment served by any bilge suction pipe being flooded in the event of the pipe being severed or otherwise damaged by collision or grounding in any other compartment. For this purpose, where the pipe is at any part situated nearer the side of the ship than one fifth of the breadth of the ship (measured at right angles to the centreline at the level of the deepest subdivision load line), or is in a duct keel, a nonreturn valve shall be fitted to the pipe in the compartment containing the open end.

(10) Distribution boxes, cocks and valves in connection with the bilge pumping system shall be so arranged that, in the event of flooding, one of the bilge pumps may be operative on any compartment; in addition, damage to a pump or its pipe connecting to the bilge main outboard of a line drawn at one fifth of the breadth of the ship shall not put the bilge system

out of action. If there is only one system of pipes common to all the pumps the necessary valves for controlling the bilge suctions must be capable of being operated from above the bulkhead deck. Where in addition to the main bilge pumping system an emergency bilge pumping system is provided, it shall be independent of the main system and so arranged that a pump is capable of operating on any compartment under flooding condition as specified in sub-clause (1) of this clause; in that case only the valves necessary for the operation of the emergency system need be capable of being operated from above the bulkhead deck.

(11) All cocks and valves referred to in sub-clause (10) which can be operated from above the bulkhead deck shall have their controls at their place of operation clearly marked and shall be provided with means to indicate whether they are open or closed. Operating rods for bilge suction valves or cocks shall be lead as directly as possible and those passing through a cargo space or coal-bunker space shall be protected against damage in such spaces.

30. Cargo Ships—(1) At least two power pumps connected to the main bilge system shall be provided, one of which may be driven by the propulsion machinery. If the Chief Surveyor is satisfied that the safety of the ship is not impaired, bilge pumping arrangements may be dispensed with in particular compartments.

PART V

MACHINERY INSTALLATIONS

Section A

31. General—(1) The machinery, boilers and other pressure vessels, associated piping systems and fittings shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to moving parts, hot surfaces and other hazards. The design shall have regard to materials used in construction, the purpose for which the equipment is intended, the working conditions to which it will be subjected and the environmental conditions on board.

(2) Special consideration will be given to the reliability of single essential propulsion components and the Chief Surveyor may require a separate source of propulsion power sufficient to give the ship a navigable speed, especially in the case of unconventional arrangements.

(3) Means shall be provided whereby normal operation of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration shall be given to the malfunctioning of:

(a) a generating set which serves as a main source of electrical power;

(b) the sources of steam supply;

(c) the boiler feedwater systems;

(d) the fuel oil supply systems for boilers or engines;

(e) the sources of lubricating oil pressure;

(f) the sources of water pressure;

(g) a condensate pump and the arrangements to maintain vacuum in condensers;

(h) the mechanical air supply for boilers;

(i) an air compressor and receiver for starting or control purposes;

(j) the hydraulic, pneumatic or electrical means for control in main propulsion machinery including controllable pitch propellers.

However, the Chief Surveyor, having regard to overall safety considerations, may accept a partial reduction in propulsion capability from normal operation.

(4) Means shall be provided to ensure that the machinery can

be brought into operation from the dead ship condition without external aid.

(5) All boilers, all parts of machinery, all steam, hydraulic, pneumatic and other systems and their associated fittings which are under internal pressure shall be subjected to appropriate tests including a pressure test before being put into service for the first time.

(6) Main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the ship shall, as fitted in the ship, be designed to operate when the ship is upright and when inclined at any angle of list up to and including 15° either way under static conditions and 22.5° under dynamic conditions (rolling) either way and simultaneously inclined dynamically (pitching) 7.5° by bow or stern. The Chief Surveyor may permit deviation from these angles, taking into consideration the type, size and service conditions of the ship.

(7) Provision shall be made to facilitate cleaning, inspection and maintenance of main propulsion and auxiliary machinery including boilers and pressure vessels.

(8) Special consideration shall be given to the design, construction and installation of propulsion machinery systems so that any mode of their vibrations shall not cause undue stresses in this machinery in the normal operating ranges.

32. Means of Going Astern—(1) Sufficient power for going astern shall be provided to secure proper control of the ship in all normal circumstances.

(2) The ability of the machinery to reverse the direction of thrust of the propeller in sufficient time, and so to bring the ship to rest within a reasonable distance from maximum ahead service speed, shall be demonstrated and recorded.

(3) The stopping times, ship headings and distances recorded on trials, together with the results of trials to determine the ability of ships having multiple propellers to navigate and manoeuvre with one or more propellers inoperative, shall be available on board for the use of the master.

(4) Where the ship is provided with supplementary means for manoeuvring or stopping, the effectiveness of such means shall be demonstrated and recorded as referred to in sub-clauses (2) and (3) of this clause.

33. Machinery—(1) Where risk from overspeeding of machinery exists, means shall be provided to ensure that the safe speed is not exceeded.

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

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

(4) Internal combustion engines of a cylinder diameter of 200mm or a crankcase volume of 0.6m³ and above shall be provided with crankcase explosion relief valves of a suitable type with sufficient relief area. The relief valves shall be arranged or provided with means to ensure that discharge from them is so directed as to minimise the possibility of injury to personnel.

(5) Main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shutoff arrangements in the case of failures such as lubricating oil supply failure which could lead rapidly to complete breakdown, serious damage or explosion. The Chief Surveyor

may permit provisions for overriding automatic shutoff devices.

34. Machinery Controls—(1) Main and auxiliary machinery essential for the propulsion and safety of the ship shall be provided with effective means for its operation and control.

(2) Where remote control of propulsion machinery from the navigating bridge is provided and the machinery spaces are intended to be manned, the following shall apply:

(a) the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge under all sailing conditions, including manoeuvring.

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

(c) the main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system;

(d) propulsion machinery orders from the navigating bridge shall be indicated in the main machinery control room or at the manoeuvring platform as appropriate;

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

(f) it shall be possible to control the propulsion machinery locally, even in the case of failure in any part of the remote control system;

(g) the design of the remote control system shall be such that in case of its failure an alarm will be given. Unless the Chief Surveyor considers it impracticable the preset speed and direction of thrust of the propeller shall be maintained until local control is in operation;

(h) indicators shall be fitted on the navigating bridge for:

(i) propeller speed and direction of rotation in the case of fixed pitch propellers;

(ii) propeller speed and pitch position in the case of controllable pitch propellers;

(i) an alarm shall be provided on the navigating bridge and in the machinery space to indicate low starting air pressure which shall be set at a level to permit further main engine starting operations. If the remote control system of the propulsion machinery is designed for automatic starting, the number of automatic consecutive attempts which fail to produce a start shall be limited in order to safeguard sufficient starting air pressure for starting locally.

(3) Where the main propulsion and associated machinery, including sources of main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision; for this purpose clauses 51 to 54 of this Code shall apply as appropriate. Particular consideration shall be given to protect such spaces against fire and flooding.

(4) In general, automatic starting, operational and control systems shall include provisions for manually overriding the automatic controls. Failure of any part of such systems shall not prevent the use of the manual override.

35. Steam boilers and boiler feed systems—(1) Every steam boiler and every unfired steam generator shall be provided with not less than two safety valves of adequate capacity. However, having regard to the output or any other features of any boiler or unfired steam generator, the Chief Surveyor may permit only one safety valve to be fitted if the Chief Surveyor is satisfied that adequate protection against overpressure is thereby provided.

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

(3) Water tube boilers serving turbine propulsion machinery shall be fitted with a high-water-level alarm.

(4) Every steam generating system which provides services essential for the safety of the ship, or which could be rendered dangerous by the failure of its feedwater supply, shall be provided with not less than two separate feedwater systems from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Unless overpressure is prevented by the pump characteristics means shall be provided which will prevent over-pressure in any part of the systems.

(5) Boilers shall be provided with means to supervise and control the quality of the feedwater. Suitable arrangements shall be provided to preclude, as far as practicable, the entry of oil or other contaminants which may adversely affect the boiler.

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

36. Steam Pipe Systems—(1) In every ship every steam pipe and every fitting connected thereto through which steam may pass shall be so designed and constructed as to withstand the maximum working stresses to which it may be subjected, with a factor of safety which is adequate having regard to:

- (a) the material of which it is constructed, and
- (b) the working conditions under which it will be used.

(2) Without prejudice to the generality of the foregoing, every steam pipe or fitting shall, before being put into service for the first time, be subjected to a test by hydraulic pressure to a pressure suitably in excess of the working pressure to be determined having regard to the requirements of (a) and (b) of the preceding sub-clause and every such steam pipe or fitting shall be maintained in an efficient condition.

(3) Steam pipes shall be adequately supported.

(4) Provision shall be made which will avoid excessive stress likely to lead to the failure of any such steam pipe or fitting, whether by reason of variation in temperature, vibration or otherwise.

(5) Efficient means shall be provided for draining every such steam pipe so as to ensure that the interior of the pipe is kept free of water and that water hammer action will not occur under any condition likely to arise in the course of the intended service of the ship.

(6) If a steam pipe may receive steam from any source at a higher pressure than it can otherwise withstand with an adequate factor of safety, an efficient reducing valve, relief valve and pressure gauge shall be fitted to such pipe.

37. Air Pressure systems—(1) In every ship in which machinery essential for the propulsion and safety of the ship or of persons on board is required to be started, operated or controlled solely by compressed air, there shall be provided an efficient air system which shall include a sufficient number of air compressors and compressed air storage vessels to ensure that an adequate supply of compressed air is available under all conditions likely to be met in service.

(2) (a) The parts of each compressed air system which are subjected to air pressure shall be designed and constructed to withstand, with an adequate factor of safety, the maximum working stresses to which they may be subjected, and every air pressure pipe or fitting in such system, other than a pneumatic control system, shall, before being put into service for the first time, be subject to a hydraulic test suitably in excess of the maximum working pressure to which it may be subjected and be maintained in an efficient condition.

(b) Means shall be provided to prevent overpressure in any part of any such compressed air system and, where water jackets or casings of air compressors and coolers might otherwise be subjected to dangerous overpressure due to leakage into them from air pressure parts, suitable pressure relief arrangements shall be provided.

(c) Provision shall be made to reduce to a minimum entry of oil into any such compressed air system and to drain the system. Provision shall also be made to protect the system from the effects of internal explosion.

(d) All discharge pipes from starting air compressors shall lead directly to the starting air receivers, and all starting air pipes from the air receivers to main or auxiliary engines shall be entirely separate from the compressor discharge pipe system.

38. Cooling Water Systems—In every ship in which cooling water services are essential for the running of the propelling machinery there shall be at least two means of operating such water services.

39. Oil and Fuel Installations—(1) Any oil fuel used in boilers or machinery shall have a flash point of not less than 60°C, except in the case of the following:

(a) In emergency generators oil fuel with a flashpoint of not less than 43°C may be used.

(b) Subject to such additional precautions as the Chief Surveyor may consider necessary and on condition that the ambient temperature of the space in which such oil fuel is stored or used shall not be allowed to rise to within 10°C below the flashpoint of the oil fuel, the Chief Surveyor may permit the general use of oil fuel having a flashpoint of less than 60°C but not less than 43°C.

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

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

(2) The arrangements for the storage, distribution and utilisation of the oil fuel shall be such as to ensure the safety of the ship and persons on board and shall at least comply with the following provisions:

(a) As far as practicable, parts of the oil fuel system containing heated oil under pressure exceeding 180kPa shall not be placed in a concealed position such that defects and leakage cannot readily be observed. The machinery spaces in way of such parts of the oil fuel system shall be adequately illuminated.

(b) The ventilation of machinery spaces shall be sufficient under all normal conditions to prevent accumulation of oil vapour.

(c) As far as practicable, oil fuel tanks shall be part of the ship's structure and shall be located outside machinery spaces of category A. Where oil fuel tanks, other than double bottom tanks, are necessarily located adjacent to or within machinery spaces of category A, at least one of their vertical sides shall be contiguous to the machinery space boundaries, and shall preferably have a common boundary with the double bottom tanks, and the area of the tank boundary common with the machinery spaces shall be kept to a minimum. Where such

tanks are situated within the boundaries of machinery spaces of category A they shall not contain oil fuel having a flashpoint of less than 60°C. In general the use of free-standing oil fuel tanks shall be avoided. When such tanks are employed their use shall be prohibited in category A machinery spaces on passenger ships. Where permitted, they shall be placed in an oil-tight spill tray of ample size having a suitable drain pipe leading to a suitably sized spill oil tank.

(d) No oil fuel tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces. Precautions shall be taken to prevent any oil that may escape under pressure from any pump, filter or heater from coming into contact with heated surfaces.

(e) Every oil fuel pipe, which, if damaged, would allow oil to escape from a storage, settling or daily service tank situated above the double bottom shall be fitted with a cock or valve directly on the tank capable of being closed from a safe position outside the space concerned in the event of a fire occurring in the space in which such tanks are situated. In the special case of deep tanks situated in any shaft or pipe tunnel or similar space, valves on the tank shall be fitted but control in the event of fire may be effected by means of an additional valve on the pipe or pipes outside the tunnel or similar space. If such additional valve is fitted in the machinery space it shall be operated from a position outside this space.

(f) Safe and efficient means of ascertaining the amount of oil fuel contained in any oil fuel tank shall be provided. Sounding pipes shall not terminate in any space where the risk of ignition of spillage from the sounding pipe might arise. In particular, they shall not terminate in passenger or crew spaces. Other means of ascertaining the amount of oil fuel contained in any oil fuel tank may be permitted if:

- (i) in passenger ships, such means do not require penetration below the top of the tank, and providing their failure or overflowing of the tanks will not permit release of fuel; and
- (ii) in cargo ships, providing the failure of such means or overflowing of the tanks will not permit release of fuel. The use of cylindrical gauge glasses is prohibited. The Chief Surveyor may permit the use of oil level gauges with flat glasses and self-closing valves between the gauges and oil tanks.

Such other means shall be acceptable to the Chief Surveyor and shall be maintained in the proper condition to ensure their continued accurate functioning in service.

(g) Provision shall be made to prevent overpressure in any oil tank or in any part of the oil fuel system, including the filling pipes. Any relief valves and air or overflow pipes shall discharge to a position which, in the opinion of the Chief Surveyor is safe.

(h) Oil fuel pipes and their valves and fittings shall be of steel or other approved material, except that restricted use of flexible pipes shall be permissible in positions where the Chief Surveyor is satisfied that they are necessary. Such flexible pipes and end attachments shall be of approved fire-resisting materials of adequate strength and shall be constructed to the satisfaction of the Chief Surveyor.

(i) Oil fuel shall not be carried in forepeak tanks.

40. Lubricating and other oil systems—(1) In every ship in which oil for lubrication, cooling or operation of the main propelling machinery and its ancillary services is circulated under pressure, provision shall be made so that in the event of the failure of a pump an alternative means of circulating such oil is available.

(2) The arrangements for the storage, distribution and utilisation of oil used in pressure lubrication systems shall be such as to ensure the safety of the ship and persons on board, and such arrangements in machinery spaces of category A and whenever practicable in other machinery spaces shall at least

comply with the provisions of Clause 39(2), paragraphs (a), (d), (e), (f), (g) and (h) except that this does not preclude the use of sight flow glasses in lubricating systems provided that they are shown by test to have a suitable degree of fire resistance.

(3) The arrangements for the storage, distribution and utilisation of other flammable oils employed under pressure in power transmission systems, control and activating systems and heating systems shall be such as to ensure the safety of the ship and persons on board. In locations where means of ignition are present, such arrangements shall at least comply with the provisions of Clause 39(2), paragraphs (d) and (f) and with the provisions of Clause 39(2), paragraphs (g) and (h) in respect of strength and construction.

(4) Lubricating oil and other flammable oils shall not be carried in fore peak tanks.

41. Ventilation systems in machinery spaces—Machinery spaces of category A shall be adequately ventilated so as to ensure that when machinery or boilers therein are operating at full power in all weather conditions including heavy weather, an adequate supply of air is maintained to the spaces for the safety and comfort of personnel and the operation of the machinery. Any other machinery space shall be adequately ventilated appropriate for the purpose of that machinery space.

42. Communication between Navigating Bridge and Machinery Space—At least two independent means shall be provided for communicating orders from the navigating bridge to the position in the machinery space or in the control room from which the engines are normally controlled: one of these shall be an engine-room telegraph which provides visual indication of the orders and responses both in the machinery space and on the navigating bridge. Appropriate means of communication shall be provided to any other positions from which the engines may be controlled.

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

44. Location of Emergency Installations in Passenger Ships—Emergency sources of electrical power, fire pumps, bilge pumps except those specifically serving the spaces forward of the collision bulkhead, any fixed fire-extinguishing system required by the Shipping (Fire Appliance) Regulations 1989 and other emergency installations which are essential for the safety of the ship, except anchor windlasses, shall not be installed forward of the collision bulkhead.

45. Steering Gear—(1) Unless expressly provided otherwise, every ship shall be provided with a main steering gear and an auxiliary steering gear to the satisfaction of the Chief Surveyor. The main steering gear and the auxiliary steering gear shall be so arranged that the failure of one of them will not render the other one inoperative.

(2) All the steering gear components and the rudder stock shall be of sound and reliable construction to the satisfaction of the Chief Surveyor. Special consideration shall be given to the suitability of any essential component which is not duplicated. Any such essential component shall, where appropriate, utilise antifriction bearings such as ball-bearings, roller-bearings or sleeve-bearings which shall be permanently lubricated or provided with lubrication fittings.

(3) The design pressure for calculations to determine the scantlings of piping and other steering gear components subjected to internal hydraulic pressure shall be at least 1.25 times the maximum working pressure to be expected under the operational conditions specified in sub-clause (5)(b) of this clause taking into account any pressure which may exist in the low-pressure side of the system. At the discretion of the Chief Surveyor, fatigue criteria shall be applied for the design of

pipings and components, taking into account pulsating pressures due to dynamic loads.

(4) Relief valves shall be fitted to any part of the hydraulic system which can be isolated and in which pressure can be generated from the power source or from external forces. The setting of the relief valves shall not exceed the design pressure. The valves shall be of adequate size and so arranged as to avoid an undue rise in pressure above the design pressure.

(5) The main steering gear and rudder stock shall be:

(a) of adequate strength and capable of steering the ship at maximum ahead service speed which shall be demonstrated;

(b) capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side in not more than 28 seconds;

(c) operated by power where necessary to meet the requirements of paragraph (b) above and in any case when the rudder stock is over 120mm diameter in way of the tiller, excluding strengthening for navigation in ice; and

(d) so designed that they will not be damaged at maximum astern speed; however, this design requirement need not be proved by trials at maximum astern speed and maximum rudder angle.

(6) The auxiliary steering gear shall be:

(a) of adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency;

(b) capable of putting the rudder over from 15° on one side to 15° on the other side in not more than 60 seconds with the ship at its deepest seagoing draught and running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and

(c) operated by power where necessary to meet the requirements of paragraph (b) above—and in any case when the rudder stock is over 230mm diameter in way of the tiller, excluding strengthening for navigation in ice.

(7) Main and auxiliary steering gear power units shall be:

(a) arranged to restart automatically when power is restored after a power failure; and

(b) capable of being brought into operation from a position on the navigating bridge. In the event of a power failure to any one of the steering gear power units, an audible and visual alarm shall be given on the navigating bridge.

(8)(a) Where the main steering gear comprises two or more identical power units, an auxiliary steering gear need not be fitted, provided that:

(i) in a passenger ship, the main steering gear is capable of operating the rudder as required by sub-clause (5)(b) of this clause while any one of the power units is out of operation;

(ii) in a cargo ship, the main steering gear is capable of operating the rudder as required by sub-clause (5)(b) of this clause while operating with all power units;

(iii) the main steering gear is so arranged that after a single failure in its piping system or in one of the power units the defect can be isolated so that steering capability can be maintained or speedily regained.

(b) Steering gears, other than of the hydraulic type, shall achieve standards equivalent to the requirements of this paragraph to the satisfaction of the Chief Surveyor.

(9) Steering gear control shall be provided:

(a) for the main steering gear, both on the navigating bridge and in the steering gear compartment;

(b) where the main steering gear is arranged in accordance with sub-clause (8) of this clause, by two independent control

systems, both operable from the navigating bridge. This does not require duplication of the steering wheel or steering lever. Where the control system consists of an hydraulic telemotor, a second independent system need not be fitted, except in a tanker, chemical tanker or gas carrier of 10,000 gross tonnage and upwards;

(c) for the auxiliary steering gear, in the steering gear compartment and, if power-operated, it shall also be operable from the navigating bridge and shall be independent of the control system for the main steering gear.

(10) Any main and auxiliary steering gear control system operable from the navigating bridge shall comply with the following:

(a) if electric, it shall be served by its own separate circuit supplied from a steering gear power circuit from a point within the steering gear compartment, or directly from switchboard busbars supplying that steering gear power circuit at a point on the switchboard adjacent to the supply to the steering gear power circuit;

(b) means shall be provided in the steering gear compartment for disconnecting any control system operable from the navigating bridge from the steering gear it serves;

(c) the system shall be capable of being brought into operation from a position on the navigating bridge;

(d) in the event of a failure of electrical power supply to the control system, an audible and visual alarm shall be given on the navigating bridge; and

(e) short circuit protection only shall be provided for steering gear control supply circuits.

(11) The electric power circuits and the steering gear control systems with their associated components, cables and pipes required by this clause and by clause 46 of this Code shall be separated as far as is practicable throughout their length.

(12) A means of communication shall be provided between the navigating bridge and the steering gear compartment.

(13) The angular position of the rudder shall:

(a) if the main steering gear is power-operated, be indicated on the navigating bridge. The rudder angle indication shall be independent of the steering gear control system;

(b) be recognisable in the steering gear compartment.

(14) Hydraulic power-operated steering gear shall be provided with the following:

(a) arrangements to maintain the cleanliness of the hydraulic fluid taking into consideration the type and design of the hydraulic system;

(b) a low-level alarm for each hydraulic fluid reservoir to give the earliest practicable indication of hydraulic fluid leakage. Audible and visual alarms shall be given on the navigating bridge and in the machinery space where they can be readily observed; and

(c) a fixed storage tank having sufficient capacity to recharge at least one power actuating system including the reservoir, where the main steering gear is required to be power-operated. The storage tank shall be permanently connected by piping in such a manner that the hydraulic systems can be readily recharged from a position within the steering gear compartment and shall be provided with a contents gauge.

(15) The steering gear compartment shall be:

(a) readily accessible and, as far as practicable, separated from machinery spaces; and

(b) provided with suitable arrangements to ensure working access to steering gear machinery and controls. These arrangements shall include handrails and gratings or other nonslip surfaces to ensure suitable working conditions in the event of hydraulic fluid leakage.

(16) Where the rudder stock is required to be over 230mm

diameter in way of the tiller, excluding strengthening for navigation in ice, an alternative power supply, sufficient at least to supply the steering gear power unit which complies with the requirements of sub-clause (6)(b) of this clause and also its associated control system and the rudder angle indicator, shall be provided automatically, within 45 seconds, either from the emergency source of electrical power or from an independent source of power located in the steering gear compartment. This independent source of power shall be used only for this purpose. In every ship of 10,000 gross tonnage and upwards, the alternative power supply shall have a capacity for at least 30 minutes of continuous operation and in any other ship for at least 10 minutes.

(17) In every tanker, chemical tanker or gas carrier of 10,000 gross tonnage and upwards and in every other ship of 70,000 gross tonnage and upwards, the main steering gear shall comprise two or more identical power units complying with the provisions of sub-clause (8) of this clause.

(18) Every tanker, chemical tanker or gas carrier of 10,000 gross tonnage and upwards shall, subject to sub-clause (19) of this clause, comply with the following:

(a) the main steering gear shall be so arranged that in the event of loss of steering capability due to a single failure in any part of one of the power actuating systems of the main steering gear, excluding the tiller, quadrant or components serving the same purpose, or seizure of the rudder actuators, steering capability shall be regained in not more than 45 seconds after the loss of one power actuating system.;

(b) the main steering gear shall comprise either:

(i) two independent and separate power actuating systems, each capable of meeting the requirements of sub-clause (5)(b) of this clause; or

(ii) at least two identical power actuating systems which, acting simultaneously in normal operation, shall be capable of meeting the requirements of sub-clause (5)(b) of this clause. Where necessary to comply with this requirement, interconnection of hydraulic power actuating systems shall be provided. Loss of hydraulic fluid from one system shall be capable of being detected and the defective system automatically isolated so that the other actuating system or systems shall remain fully operational;

(c) steering gears other than of the hydraulic type shall achieve equivalent standards.

(19) For tankers, chemical tankers or gas carriers of 10,000 gross tonnage and upwards, but of less than 100,000 tonnes deadweight, solutions other than those set out in sub-clause (18) of this clause which need not apply the single failure criterion to the rudder actuator or actuators, may be permitted provided that an equivalent safety standard is achieved and that:

(a) following loss of steering capability due to a single failure of any part of the piping system or in one of the power units, steering capability shall be regained within 45 seconds; and

(b) where the steering gear includes only a single rudder actuator, the design, construction and testing of the rudder actuator shall be in accordance with IMO Resolution A.467(XII) "Guidelines for Acceptance of Non-Duplicated Rudder Actuators for Tankers, Chemical Tankers and Gas Carriers of 10,000 Gross Tonnage and Above but less than 100,000 Tonnes Deadweight".

46. Additional Requirements for Electric and Electrohydraulic Steering Gear—(1) Means for indicating that the motors of electric and electrohydraulic steering gear are running shall be installed on the navigating bridge and at a suitable main machinery control position.

(2) Each electric or electrohydraulic steering gear comprising one or more power units shall be served by at least two exclusive circuits fed directly from the main switchboard;

however, one of the circuits may be supplied through the emergency switchboard. An auxiliary electric or electrohydraulic steering gear associated with a main electric or electrohydraulic steering gear may be connected to one of the circuits supplying this main steering gear. The circuits supplying an electric or electrohydraulic steering gear shall have adequate rating for supplying all motors which can be simultaneously connected to them and may be required to operate simultaneously.

(3) Short circuit protection and an overload alarm shall be provided for such circuits and motors. Protection against excess current, including starting current, if provided, shall be for not less than twice the full load current of the motor or circuit so protected, and shall be arranged to permit the passage of the appropriate starting currents. Where a three-phase supply is used an alarm shall be provided that will indicate failure of any one of the supply phases. The alarms required in this paragraph shall be both audible and visual and shall be situated in a conspicuous position in the main machinery space or control room from which the main machinery is normally controlled and as may be required by the Shipping (Fire Appliances) Regulations 1989.

(4) When in a ship of less than 1,600 gross tonnage an auxiliary steering gear which is required by clause 45(6)(c) of this Code to be operated by power is not electrically powered or is powered by an electric motor primarily intended for other services, the main steering gear may be fed by one circuit from the main switchboard. Where such an electric motor primarily intended for other services is arranged to power such an auxiliary steering gear, the requirement of sub-clause (3) of this clause may be waived by the Chief Surveyor if satisfied with the protection arrangement together with the requirements of clauses (45)(7)(a), (45)(7)(b) and (45)(9)(c) applicable to auxiliary steering gear.

47. Protection Against Noise—(1) In every ship measures shall be taken to reduce noise levels in machinery spaces as far as is reasonable and practicable. On completion of a ship, noise levels in machinery spaces shall be measured in a manner approved by the Chief Surveyor.

(2) Noise levels in machinery spaces shall not exceed 110 dB(A) provided that the Chief Surveyor may, under such conditions as he may specify, permit higher noise levels having regard to the size of ship and the type of machinery installed.

(3) Any machinery space in which the noise level exceeds 90 dB(A) and which is required to be manned shall be provided with a designated refuge from noise.

(4) Every entrance to a machinery space in which the noise level exceeds 85 dB(A) shall be provided with a warning notice comprising a symbol complying with British Standards Institution specification number BS5378:1980 and a supplementary sign stating 'High Noise Levels. Use Ear Protectors'. Sufficient ear protectors shall be provided for use in such spaces.

48. Lifts—The construction and installation of every lift used for carrying persons, cargo, vehicles, or ship's stores on board a ship to which these regulations apply shall comply with such specifications as the Chief Surveyor considers necessary.

49. Spare Gear and Tools—(1) Every ship shall be provided with a sufficient quantity of spare gear, having regard to the intended service of the ship, to enable repairs or renewals which are essential for the safety of the ship and of persons on board and which can reasonably be effected while the ship is at sea to be carried out, and such tools as are necessary for fitting that spare gear shall be provided.

(2) Other than for ships of Class I of less than 24 metres in length, the spare gear and tools referred to in subclause (1) of this clause shall not all be stored in one compartment but shall be distributed between at least two compartments. One of these compartments shall preferably be above, the bulkhead

deck, but, if both compartments are below the bulkhead deck, they shall not be in adjacent watertight compartments.

(3) Other than for ships of Class I of less than 24 metres in length, at least one set of portable gas or pneumatic cutting equipment shall be kept in a locked compartment in an approved position accessible only to ship's personnel authorised by the master.

SECTION B

50. Periodically Unattended Machinery Spaces—This section, except for clause 59 applies to cargo ships and only to ships with machinery spaces containing machinery used or essential for propulsion, which are intended to be periodically unattended under any sailing condition, including manoeuvring.

51. General—(1) The arrangements provided shall be such as to ensure that the safety of the ship in all sailing conditions, including manoeuvring is equivalent to that of a ship having the machinery spaces manned.

(2) Measures shall be taken to the satisfaction of the Chief Surveyor to ensure that the equipment is functioning in a reliable manner and that satisfactory arrangements are made for regular inspections and routine tests to ensure continuous reliable operation.

(3) Every ship shall be provided with documentary evidence, to the satisfaction of the Chief Surveyor of its fitness to operate with periodically unattended machinery spaces.

52. Protection Against Flooding—(1) Bilge wells in periodically unattended machinery spaces shall be located and monitored in such a way that the accumulation of liquids is detected at normal angles of trim and heel, and shall be large enough to accommodate easily the normal drainage during the unattended period.

(2) Where the bilge pumps are capable of being started automatically, means shall be provided to indicate when the influx of liquid is greater than the pump capacity or when the pump is operating more frequently than would normally be expected. In these cases, smaller bilge wells to cover a reasonable period of time may be permitted. Where automatically controlled bilge pumps are provided, special attention shall be given to oil pollution prevention requirements.

(3) The location of the controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system shall be so sited as to allow adequate time for operation in case of influx of water to the space, having regard to the time likely to be required in order to reach and operate such controls. If the level to which the space could become flooded with the ship in the fully loaded condition so requires, arrangements shall be made to operate the controls from a position above such level.

53. Control of Propulsion Machinery from the Navigating Bridge—(1) Under all sailing conditions, including manoeuvring, the speed, direction of thrust and, if applicable, the pitch of the propeller shall be fully controllable from the navigating bridge.

Such remote control shall be performed by a single control device for each independent propeller, with automatic performance of all associated services, including, where necessary, means of preventing overload of the propulsion machinery.

The main propulsion machinery shall be provided with an emergency stopping device on the navigating bridge which shall be independent of the navigating bridge control system.

(2) Propulsion machinery orders from the navigating bridge shall be indicated in the main machinery control room or at the propulsion machinery control position as appropriate.

(3) Remote control of the propulsion machinery shall be possible only from one location at a time; at such locations

interconnected control positions are permitted. At each location there shall be an indicator showing which location is in control of the propulsion machinery. The transfer of control between the navigating bridge and machinery spaces shall be possible only in the main machinery space or in the main machinery control room. The system shall include means to prevent the propelling thrust from altering significantly when transferring control from one location to another.

(4) It shall be possible for all machinery essential for the safe operation of the ship to be controlled from a local position, even in the case of failure in any part of the automatic or remote control systems.

(5) The design of the remote automatic control system shall be such that in case of its failure an alarm will be given. Unless the Chief Surveyor considers it impracticable, the preset speed and direction of thrust of the propeller shall be maintained until local control is in operation.

(6) Indicators shall be fitted on the navigating bridge for:

(a) propeller speed and direction of rotation in the case of fixed pitch propellers; or

(b) propeller speed and pitch position in the case of controllable pitch propellers.

(7) The number of consecutive automatic attempts which fail to produce a start shall be limited to safeguard sufficient starting air pressure. An alarm shall be provided to indicate low starting air pressure set at a level which still permits starting operations of the propulsion machinery.

54. Communication—A reliable means of vocal communication shall be provided between the main machinery control room or the propulsion machinery control position as appropriate, the navigating bridge and the engineer officers' accommodation.

55. Alarm System—(1) An alarm system shall be provided indicating any fault requiring attention and shall:

(a) be capable of sounding an audible alarm in the main machinery control room or at the propulsion machinery control position, and indicate visually each separate alarm function at a suitable position;

(b) have a connection to the engineers' public rooms and to each of the engineers' cabins through a selector switch, to ensure connection to at least one of those cabins. The Chief Surveyor may permit equivalent arrangements;

(c) activate an audible and visual alarm on the navigating bridge for any situation which requires action by or attention of the officer on watch;

(d) as far as is practicable be designed on the fail-to-safety principle; and

(e) activate the engineers' alarm required by Clause 43 if an alarm function has not received attention locally within a limited time.

(2) The alarm system shall be continuously powered and shall have an automatic change-over to a stand-by power supply in case of loss of normal power supply.

Failure of the normal power supply of the alarm system shall be indicated by an alarm.

(3) The alarm system shall be able to indicate at the same time more than one fault and the acceptance of any alarm shall not inhibit another alarm.

Acceptance at the position referred to in sub-clause (1) of this clause of any alarm condition shall be indicated at the positions where it was shown. Alarms shall be maintained until they are accepted and the visual indications of individual alarms shall remain until the fault has been corrected, when the alarm system shall automatically reset to the normal operating condition.

56. Safety Systems—A safety system shall be provided to ensure that serious malfunction in machinery or boiler

operations, which presents an immediate danger, shall initiate the automatic shutdown of that part of the plant and that an alarm shall be given. Shutdown of the propulsion system shall not be automatically activated except in cases which could lead to serious damage, complete breakdown, or explosion. Where arrangements for overriding the shutdown of the main propelling machinery are fitted, these shall be such as to preclude inadvertent operation. Visual means shall be provided to indicate when the override has been activated.

57. Special Requirements for Machinery, Boiler and Electrical Installations—(1) The special requirements for the machinery, boiler and electrical installations shall be to the satisfaction of the Chief Surveyor and shall include at least the requirements of this clause.

(2) The main source of electrical power shall comply with the following:

(a) Where the electrical power can normally be supplied by one generator, suitable load-shedding arrangements shall be provided to ensure the integrity of supplies to services required for propulsion and steering as well as the safety of the ship. In the case of loss of the generator in operation, adequate provision shall be made for automatic starting and connecting to the main switchboard of a stand-by generator of sufficient capacity to permit propulsion and steering and to ensure the safety of the ship with automatic restarting of the essential auxiliaries including, where necessary, sequential operations. This requirement for a ship of less than 1,600 gross tonnage may be dispensed with if the Chief Surveyor considers it impracticable.

(b) If the electrical power is normally supplied by more than one generator simultaneously in parallel operation, provision shall be made, for instance, by load shedding, to ensure that, in case of loss of one of these generating sets, the remaining ones are kept in operation without overload to permit propulsion and steering, and to ensure the safety of the ship.

(3) Where stand-by machines are required for other auxiliary machinery essential to propulsion, automatic change-over devices shall be provided.

(4) The control system shall be such that the services needed for the operation of the main propulsion machinery and its auxiliaries are ensured through the necessary automatic arrangements.

An alarm shall be given on the automatic change-over.

An alarm system complying with clause 55 of this Code shall be provided for all important pressures, temperatures and fluid levels and other essential parameters.

A centralised control position shall be arranged with the necessary alarm panels and instrumentation indicating any alarm.

(5) Means shall be provided to keep the starting air pressure at the required level where internal combustion engines are used for main propulsion.

58. Fire protection—(1) Means shall be provided to detect and give alarms at an early stage in case of fires:

(a) in boiler air supply casings and exhausts (uptakes); and

(b) in scavenging air belts of propulsion machinery, unless the Chief Surveyor considers this to be unnecessary in a particular case.

(2) Internal combustion engines of 2250kW and above or having cylinders of more than 300mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.

(3) In addition to the requirements of clause 39 and 40 of this Code, the oil fuel and lubricating oil systems shall comply with the following:

(a) Where necessary, oil fuel and lubricating oil pipelines shall be screened or otherwise suitably protected to avoid as far as practicable oil spray or oil leakages on to hot surfaces or

into machinery air intakes. The number of joints in such piping systems shall be kept to a minimum and, where practicable, leakages from high pressure oil fuel pipes shall be collected and arrangements provided for an alarm to be given.

(b) Where daily service oil fuel tanks are filled automatically, or by remote control, means shall be provided to prevent overflow spillages. Other equipment which treats flammable liquids automatically, e.g. oil fuel purifiers, which, whenever practicable, shall be installed in a special space reserved for purifiers and their heaters, shall have arrangements to prevent overflow spillages.

(c) Where daily service oil fuel tanks or settling tanks are fitted with heating arrangements, a high temperature alarm shall be provided if the flashpoint of the oil fuel can be exceeded.

59. Passenger Ships—Passenger ships shall be specially considered by the Chief Surveyor as to whether or not their machinery spaces may be periodically unattended and if so whether additional requirements to those stipulated in this Code are necessary to achieve equivalent safety to that of normally attended machinery spaces.

Part VI

Electrical Installations

60. General—(1) Electrical installations shall be such that;

(a) all electrical auxiliary services necessary for maintaining the ship in normal operational and habitable conditions will be ensured without recourse to the emergency source of electrical power;

(b) electrical services essential for safety will be ensured under various emergency conditions; and

(c) the safety of passengers, crew and ship from electrical hazards will be ensured.

(2) The electrical equipment and installations (including any electrical means of propulsion) shall conform with The Institution of Electrical Engineers' Regulations for the Electrical and Electronic Equipment of Ships' or such other standards as the Chief Surveyor may specify from time to time in 'Instructions to Surveyors' except so far as these are inconsistent with this Code.

61. Main Source of Electrical Power and Lighting Systems—(1) A main source of electrical power of sufficient capacity to supply all those services mentioned in clause 60(1)(a) of this Code shall be provided. This main source of electrical power shall consist of at least two generating sets.

(2) The capacity of these generating sets shall be such that in the event of any one generating set being stopped it will still be possible to supply those services necessary to provide normal operational conditions of propulsion and safety. Minimum comfortable conditions of habitability shall also be ensured which include at least adequate services for cooking, heating, domestic refrigeration, mechanical ventilation, sanitary and fresh water.

(3) The arrangements of the ship's main source of electrical power shall be such that the services referred to in clause 60(1)(a) of this Code can be maintained regardless of the speed and direction of rotation of the propulsion machinery or shafting.

(4) In addition, the generating sets shall be such as to ensure that with any one generator or its primary source of power out of operation, the remaining generating sets shall be capable of providing the electrical services necessary to start the main propulsion plant from a dead ship condition. The emergency source of electrical power may be used for the purpose of starting from a dead ship condition if its capability either alone or combined with that of any other source of electrical power is sufficient to provide at the same time those services required to be supplied by clause 62(5) paragraphs (a) to (c) or clause 64(5) paragraphs (a) to (d) of this Code.

(5) Where transformers constitute an essential part of the electrical supply system required by this clause the system shall be so arranged as to ensure the same continuity of the supply as is stated in this clause.

(6) A main electric lighting system which shall provide illumination throughout those parts of the ship normally accessible to and used by passengers or crew shall be supplied from the main source of electrical power.

(7) The arrangement of the main electric lighting system shall be such that a fire or other casualty in spaces containing the main source of electrical power, associated transforming equipment, if any, the main switchboard and the main lighting switchboard, will not render inoperative the emergency electric lighting system required by clause 62(5) paragraphs (a) and (b) or clause 64(5) paragraphs (a), (b) and (c).

(8) The arrangement of the emergency electric lighting system shall be such that a fire or other casualty in spaces containing the emergency source of electrical power, associated transforming equipment, if any, the emergency switchboard and the emergency lighting switchboard will not render the main electric lighting system required by this clause inoperative.

(9) The main switchboard shall be so placed relative to one main generating station that, as far as is practicable, the integrity of the normal electrical supply may be affected only by a fire or other casualty in one space. An environmental enclosure for the main switchboard, such as may be provided by a machinery control room situated within the main boundaries of the space, is not to be considered as separating the switchboards from the generators.

(10) Where the total installed electrical power of the main generating sets is in excess of 3MW, the main busbars shall be subdivided into at least two parts which shall normally be connected by removable links or other approved means; so far as is practicable, the connection of generating sets and any other duplicated equipment shall be equally divided between the parts. Equivalent arrangements may be permitted to the satisfaction of the Chief Surveyor.

62. Emergency Source of Electrical Power in Passenger Ships—(1) A self-contained emergency source of electrical power shall be provided.

(2) The emergency source of electrical power, associated transforming equipment, if any, transitional source of emergency power, emergency switchboard and emergency lighting switchboard shall be located above the upper-most continuous deck and shall be readily accessible from the open deck. They shall not be located forward of the collision bulkhead.

(3) The location of the emergency source of electrical power and associated transforming equipment, if any, the transitional source of emergency power, the emergency switchboard and the emergency electric lighting switchboards in relation to the main source of electrical power, associated transforming equipment, if any, and the main switchboard shall be such as to ensure to the satisfaction of the Chief Surveyor that a fire or other casualty in spaces containing the main source of electrical power, associated transforming equipment, if any, and the main switchboard or in any machinery space of category A will not interfere with the supply, control and distribution of emergency electrical power. As far as practicable, the space containing the emergency source of electrical power, associated transforming equipment, if any, the transitional source of emergency electrical power and the emergency switchboard shall not be contiguous to the boundaries of machinery spaces of category A or those spaces containing the main source of electrical power, associated transforming equipment, if any, or the main switchboard.

(4) Provided that suitable measures are taken for safeguarding independent emergency operation under all circumstances, the

emergency generator may be used exceptionally, and for short periods, to supply non-emergency circuits.

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

(a) For a period of 36 hours, emergency lighting:

(i) at every muster and embarkation station and over the sides as required by the Shipping (Lifesaving Appliances) Regulations 1989.

(ii) in alleyways, stairways and exits giving access to the muster and embarkation stations, as required by the Shipping (Musters and Training) Regulations 1989.

(iii) in all service and accommodation alleyways, stairways and exits, personnel lift cars;

(iv) in the machinery spaces and main generating stations including their control positions;

(v) in all control stations, machinery control rooms, and at each main and emergency switchboard;

(vi) at all stowage positions for firemen's outfits;

(vii) at the steering gear; and

(viii) at the fire pump, the sprinkler pump and the emergency bilge pump referred to in sub-clause (5)(d) of this clause and at the starting position of their motors.

(b) For a period of 36 hours, the navigation lights and other lights required by the Shipping (Distress Signals and Prevention of Collisions) Regulations 1988.

(c) For a period of 36 hours:

(i) all internal communication equipment required in an emergency;

(ii) the navigational aids as required by the Shipping (Electronic Navigational Equipment) Regulations 1989; where such provision is unreasonable or impracticable the Chief Surveyor may waive this requirement for ships of less than 5,000 gross tonnage;

(iii) the fire detection and fire alarm system, and the fire door holding and release system; and

(iv) for intermittent operation of the day light signalling lamp, the ship's whistle, the manually operated call points, and all internal signals that are required in an emergency;

unless such services have an independent supply for the period of 36 hours from an accumulator battery suitably located for use in an emergency.

(d) For a period of 36 hours:

(i) one of the fire pumps required by the Shipping (Fire Appliances) Regulations 1989;

(ii) the automatic sprinkler pump, if any; and

(iii) the emergency bilge pump and all the equipment essential for the operation of electrically powered remote controlled bilge valves.

(e) For the period of time required by clause 45(16) of this Code, the steering gear if required to be so supplied by that clause.

(f) For a period of half an hour:

(i) any watertight doors required by clause 12 of this Code together with their indicators and warning signals. Provided the requirements of clause 12(19) of this Code are complied with, sequential operation of the doors may be permitted providing all doors can be closed in 60 seconds;

(ii) the emergency arrangements to bring the lift cars to deck level for the escape of persons. The passenger lift cars may be brought to deck level sequentially in an emergency.

(g) In a ship engaged regularly on voyages of short duration, the Chief Surveyor if satisfied that an adequate standard of safety would be attained may accept a lesser period than the 36 hour period specified in sub-clause (5)(a) to (5)(e) of this clause but not less than 12 hours.

(6) The emergency source of electrical power may be either a generator or an accumulator battery, which shall comply with the following:

(a) Where the emergency source of electrical power is a generator, it shall be:

(i) driven by a suitable prime mover with an independent supply of fuel having a flashpoint (closed cup test) of not less than 43°C;

(ii) started automatically upon failure of the electrical supply from the main source of electrical power and shall be automatically connected to the emergency switchboard; those services referred to in sub-clause (7) of this clause shall then be transferred automatically to the emergency generating set. The automatic starting system and the characteristic of the prime mover shall be such as to permit the emergency generator to carry its full rated load as quickly as is safe and practicable, subject to a maximum of 45 seconds; unless a second independent means of starting the emergency generating set is provided, the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system; and

(iii) provided with a transitional source of emergency electrical power according to sub-clause (7) of this clause.

(b) Where the emergency source of electrical power is an accumulator battery, it shall be capable of:

(i) carrying the emergency electrical load without recharging while maintaining the voltage of the battery throughout the discharge period within 12 per cent above or below its nominal voltage;

(ii) automatically connecting to the emergency switchboard in the event of failure of the main source of electrical power; and

(iii) immediately supplying at least those services specified in sub-clause (7) of this clause.

(7) The transitional source of emergency electrical power required by sub-clause (6)(a)(iii) of this clause shall consist of an accumulator battery suitably located for use in an emergency which shall operate without recharging while maintaining the voltage of the battery throughout the discharge period within 12 per cent above or below its nominal voltage and be of sufficient capacity and so arranged as to supply automatically in the event of failure of either the main or emergency source of electrical power at least the following services, if they depend upon an electrical source for their operation:

(a) For half an hour:

(i) the lighting required by sub-clauses (5)(a) and (5)(b) of this clause.

(ii) all services required by sub-clauses (5)(c)(i), (5)(c)(iii) and (5)(c)(iv) of this clause unless such services have an independent supply for the period specified from an accumulator battery suitably located for use in an emergency.

(b) Power to close the watertight doors but not necessarily all of them simultaneously, together with their indicators and warning signals as required by sub-clause (5)(f)(i) of this clause.

(8) The emergency switchboard shall be installed as near as is practicable to the emergency source of electrical power.

(9) Where the emergency source of electrical power is a generator, the emergency switchboard shall be located in the same space unless the operation of the emergency switchboard would thereby be impaired.

(10) No accumulator battery fitted in accordance with this clause shall be installed in the same space as the emergency switchboard. An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the batteries constituting either the emergency source of electrical power or the transitional source of emergency electrical power referred to in sub-clauses (6)(a)(iii) or (7) of this clause are being discharged.

(11) The emergency switchboard shall be supplied during normal operation from the main switchboard by an interconnector feeder which is to be adequately protected at the main switchboard against overload and short circuit and which is to be disconnected automatically at the emergency switchboard upon failure of the main source of electrical power. Where the system is arranged for feedback operation, the interconnector feeder is also to be protected at the emergency switchboard at least against short circuit.

(12) In order to ensure ready availability of the emergency source of electrical power, arrangements shall be made where necessary to disconnect automatically non-emergency circuits from the emergency switchboard to ensure that electrical power shall be available automatically to the emergency circuits.

(13) The emergency generator and its prime mover and any emergency accumulator battery shall be so designed and arranged as to ensure that they will function at full rated power when the ship is upright and when inclined at any angle of list up to 22.5° or when inclined up to 10° either in the fore or aft direction, or when in any combination of angles within those limits.

(14) Provision shall be made for the periodic testing of the complete emergency system and shall include the testing of automatic starting arrangements.

63. Supplementary emergency lighting for Ro-Ro Passenger Ships—(1) In addition to the emergency lighting required by clause 62(5) of this Code, on every passenger ship with ro-ro cargo spaces or special category spaces.

(a) All passenger public spaces and alleyways shall be provided with supplementary electric lighting that can operate for at least three hours when all other sources of electric power have failed and under any condition of heel. The illumination provided shall be such that the approach to the means of escape can be readily seen. The source of power for the supplementary lighting shall consist of accumulator batteries located within the lighting units that are continuously charged, where practicable, from the emergency switchboard. Alternatively, any other means of lighting which is at least as effective may be accepted by the Chief Surveyor. The supplementary lighting shall be such that any failure of the lamp will be immediately apparent. Any accumulator battery provided shall be replaced at intervals having regard to the specified service life in the ambient conditions that they are subject to in service; and

(b) a portable rechargeable battery operated lamp shall be provided in every crew space alleyway, recreational space and every working space which is normally occupied unless supplementary emergency lighting, as required by paragraph (a) above, is provided.

64. Emergency Source of Electrical Power in Cargo Ships—(1) A self-contained emergency source of electrical power shall be provided.

(2) The emergency source of electrical power, associated transforming equipment, if any, transitional source of

emergency power, emergency switchboard and emergency lighting switchboard shall be located above the upper-most continuous deck and shall be readily accessible from the open deck. They shall not be located forward of the collision bulkhead, except where permitted by the Chief Surveyor in exceptional circumstances.

(3) The location of the emergency source of electrical power, associated transforming equipment, if any, the transitional source of emergency power, the emergency switchboard and the emergency lighting switchboard in relation to the main source of electrical power, associated transforming equipment, if any, and the main switchboard shall be such as to ensure to the satisfaction of the Chief Surveyor that a fire or other casualty in the space containing the main source of electrical power, associated transforming equipment, if any, and the main switchboard, or in any machinery space of category A will not interfere with the supply, control and distribution of emergency electrical power. As far as practicable the space containing the emergency source of electrical power, associated transforming equipment, if any, the transitional source of emergency electrical power and the emergency switchboard shall not be contiguous to the boundaries of machinery spaces of category A or those spaces containing the main source of electrical power, associated transforming equipment, if any, and the main switchboard.

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

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

(a) For a period of 3 hours, emergency lighting at every muster and embarkation station and over the sides as required by the Shipping (Lifesaving Appliances) Regulations 1989.

(b) For a period of 18 hours, emergency lighting:

(i) in all service and accommodation alleyways, stairways and exits, personnel lift cars and personnel lift trunks;

(ii) in the machinery spaces and main generating stations including their control positions;

(iii) in all control stations, machinery control rooms, and at each main and emergency switchboard;

(iv) at all stowage positions for firemen's outfits;

(v) at the steering gear; and

(vi) at the fire pump referred to in paragraph (e) below at the sprinkler pump, if any, and at the emergency bilge pump, if any, and at the starting positions of their motors.

(c) For a period of 18 hours, the navigation lights and other lights required by the Shipping (Distress Signals and Prevention of Collisions) Regulations 1988.

(d) For a period of 18 hours:

(i) all internal communication equipment as required in an emergency;

(ii) the navigational aids as required by the Shipping (Electronic Navigational Equipment) Regulations 1989; where such provision is unreasonable or impracticable the Chief Surveyor may waive this requirement for ships of less than 5,000 gross tonnage;

(iii) the fire detection and fire alarm system; and

(iv) intermittent operation of the daylight signalling lamp, the ship's whistle, the manually operated call points and all internal signals that are required in an emergency;

unless such services have an independent supply for the period of 18 hours from an accumulator battery suitably located for use in an emergency.

(e) For a period of 18 hours one of the fire pumps required by the Shipping (Fire Appliances) Regulations 1989 if depending upon the emergency generator for its source of power.

(f) For the period of time required by clause 45(16) of this Code, the steering gear if required to be so supplied by that clause.

(g) In a ship engaged regularly in voyages of short duration, the Chief Surveyor if satisfied that an adequate standard of safety would be attained, may accept a lesser period than the 18 hour period specified in sub-clauses (5)(b) to (5)(e) of this clause, but not less than 12 hours.

(6) The emergency source of electrical power may be either a generator or an accumulator battery, which shall comply with the following:

(a) Where the emergency source of electrical power is a generator, it shall be:

(i) driven by a suitable prime mover with an independent supply of fuel, having a flashpoint (closed cup test) of not less than 43°C;

(ii) started automatically upon failure of the main source of electrical power supply unless a transitional source of emergency electrical power in accordance with paragraph (iii) below is provided; where the emergency generator is automatically started, it shall be automatically connected to the emergency switchboard; those services referred to in sub-clause (7) of this clause shall then be connected automatically to the emergency generator; and unless a second independent means of starting the emergency generator is provided the single source of stored energy shall be protected to preclude its complete depletion by the automatic starting system; and

(iii) provided with a transitional source of emergency electrical power as specified in sub-clause (7) of this clause, unless an emergency generator is provided capable both of supplying the services mentioned in that sub-clause and of being automatically started and supplying the required load as quickly as is safe and practicable, subject to a maximum of 45 seconds.

(b) Where the emergency source of electrical power is an accumulator battery it shall be capable of:

(i) carrying the emergency electrical load without recharging while maintaining the voltage of the battery throughout the discharge period within 12 per cent above or below its nominal voltage;

(ii) automatically connecting to the emergency switchboard in the event of failure of the main source of electrical power; and

(iii) immediately supplying at least those services specified in sub-clause (7) of this clause.

(7) The transitional source of emergency electrical power where required by sub-clause (6)(a)(iii) of this clause shall consist of an accumulator battery suitably located for use in an emergency which shall operate without recharging while maintaining the voltage of the battery throughout the discharge period within 12 per cent above or below its nominal voltage and be of sufficient capacity and shall be so arranged as to supply automatically in the event of failure of either the main or the emergency source of electrical power for half an hour at least the following services if they depend upon an electrical source for their operation:

(i) the lighting required by sub-clauses (5)(a), (5)(b) and (5)(c) of this clause. For this transitional phase, the required emergency electric lighting, in respect of the machinery space and accommodation and service spaces may be provided by permanently fixed, individual,

automatically charged, relay operated accumulator lamps; and

- (ii) all services required by sub-clauses (5)(d)(i), (5)(d)(iii) and (5)(d)(iv) of this clause unless such services have an independent supply for the period specified, from an accumulator battery suitably located for use in an emergency.

(8) The emergency switchboard shall be installed as near as is practicable to the emergency source of electrical power.

(9) Where the emergency source of electrical power is a generator, the emergency switchboard shall be located in the same space unless the operation of the emergency switchboard would thereby be impaired.

(10) No accumulator battery fitted in accordance with this regulation shall be installed in the same space as the emergency switchboard. An indicator shall be mounted in a suitable place on the main switchboard or in the machinery control room to indicate when the batteries constituting either the emergency source of electrical power or the transitional source of electrical power referred to in sub-clauses (6)(b) or (7) of this clause are being discharged.

(11) The emergency switchboard shall be supplied during normal operation from the main switchboard by an interconnector feeder which is to be adequately protected at the main switchboard against overload and short circuit and which is to be disconnected automatically at the emergency switchboard upon failure of the main source of electrical power. Where the system is arranged for feedback operation, the interconnector feeder is also to be protected at the emergency switchboard at least against short circuit.

(12) In order to ensure ready availability of the emergency source of electrical power, arrangements shall be made where necessary to disconnect automatically non-emergency circuits from the emergency switchboard to ensure that electrical power shall be available automatically to the emergency circuits.

(13) The emergency generator and its prime mover and any emergency accumulator battery shall be so designed and arranged as to ensure that they will function at full rated power when the ship is upright and when inclined at any angle of list up to 22.5° or when inclined up to 10° either in the fore or aft direction, or when in any combination of angles within those limits.

(14) Provision shall be made for the periodic testing of the complete emergency system and shall include the testing of automatic starting arrangements.

65. Starting Arrangements for Emergency Generating Sets—(1) Emergency generating sets shall be capable of being readily started in their cold condition at a temperature of 0°C. If this is impracticable, or if lower temperatures are likely to be encountered, provision acceptable to the Chief Surveyor shall be made for the maintenance of heating arrangements, to ensure ready starting of the generating sets.

(2) Each emergency generating set arranged to be automatically started shall be equipped with starting devices approved by the Chief Surveyor with a stored energy capability of at least three consecutive starts. A second source of energy shall be provided for an additional three starts within 30 minutes unless manual starting can be demonstrated to be effective.

(3) The stored energy shall be maintained at all times, as follows:

(a) electrical and hydraulic starting systems shall be maintained from the emergency switchboard.

(b) compressed air starting systems may be maintained by the main or auxiliary compressed air receivers through a suitable nonreturn valve or by an emergency air compressor which, if electrically driven, is supplied from the emergency switchboard;

(c) all of these starting, charging and energy storing devices shall be located in the emergency generator space; these devices are not to be used for any purpose other than the operation of the emergency generating set. This does not preclude the supply to the air receiver of the emergency generating set from the main or auxiliary emergency generator space.

(4) Where automatic starting is not required, manual starting is permissible, such as manual cranking, inertia starters, manually charged hydraulic accumulators, or powder charge cartridges, where they can be demonstrated as being effective.

(5) When manual starting is not practicable, the requirements of sub-clauses (2) and (3) of this clause shall be complied with except that starting may be manually initiated.

66. Precautions Against Shock, Fire and Other Hazards of Electrical Origin—(1) Exposed metal parts of electrical machines or equipment which are not intended to be live but which are liable under fault conditions to become live shall be earthed unless the machines or equipment are:

(a) supplied at a voltage not exceeding 55V direct current or 55V, root mean square between conductors; auto-transformers shall not be used for the purpose of achieving this voltage; or

(b) supplied at a voltage not exceeding 250V by safety isolating transformers supplying only one consuming device; or

(c) constructed in accordance with the principle of double insulation.

(2) The Chief Surveyor may require additional precautions for portable electrical equipment for use in confined or exceptionally damp spaces where particular risks due to conductivity may exist.

(3) All electrical apparatus shall be so constructed and so installed as not to cause injury when handled or touched in the normal manner.

(4) Main and emergency switchboards shall be so arranged as to give easy access as may be needed to apparatus and equipment, without danger to personnel. The sides and the rear and, where necessary, the front of switchboards shall be suitably guarded. Exposed live parts having a voltage between conductors to earth exceeding 55V direct current or 55V root mean square shall not be installed on the front of such switchboards. Where necessary, nonconducting mats or gratings shall be provided at the front and rear of the switchboard.

(5) The hull return system of distribution shall not be used for any purpose in a tanker, or for power, heating, or lighting in any other ship of 1,600 gross tonnage and upwards.

(6) The requirement of sub-clause (5) of this clause does not preclude under conditions approved by the Chief Surveyor the use of:

(a) impressed current cathodic protective systems;

(b) limited and locally earthed systems; or

(c) insulation level monitoring devices provided the circulation current does not exceed 30mA under the most unfavourable conditions.

(7) Where the hull return system is used, all final subcircuits, i.e. all circuits fitted after the last protective device, shall be two-wire and special precautions shall be taken to the satisfaction of the Chief Surveyor.

(8) Earthed distribution systems shall not be used in a tanker. The Chief Surveyor may exceptionally permit in a tanker the earthing of the neutral for alternating current power networks of 3,000V (line to line) and over, provided that any possible resulting current does not flow directly through any of the dangerous spaces.

(9) When a distribution system, whether primary or secondary, for power, heating or lighting, with no connection to earth is used, a device capable of continuously monitoring the

insulation level to earth and of giving an audible or visual indication of abnormally low insulation values shall be provided.

(10) All metal sheaths and armour of cables shall be electrically continuous and shall be earthed.

(11) All electric cables and wiring external to equipment shall be at least of a flame-retardant type and shall be so installed as not to impair their original flame-retarding properties. Where necessary for particular applications the Chief Surveyor may permit the use of special types of cables such as radio frequency cables, which do not comply with the foregoing.

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

(13) Where cables which are installed in hazardous areas introduce the risk of fire or explosion in the event of an electrical fault in such areas, special precautions against such risks shall be taken to the satisfaction of the Chief Surveyor.

(14) Cables and wiring shall be installed and supported in such a manner as to avoid chafing or other damage.

(15) Terminations and joints in all conductors shall be so made as to retain the original electrical, mechanical, flame-retarding and, where necessary, fire-resisting properties of the cable.

(16) Each separate circuit shall be protected against short circuit and against overload, except as permitted in clauses 45 and 46 or where the Chief Surveyor may exceptionally otherwise permit.

(17) The rating or appropriate setting of the overload protective device for each circuit shall be permanently indicated at the location of the protective device.

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

(19) All lighting and power circuits terminating in a bunker or cargo space shall be provided with a multiple-pole switch outside the space for disconnecting such circuits.

(20) Accumulator batteries shall be suitably housed, and compartments used primarily for their accommodation shall be properly constructed and efficiently ventilated.

(21) Electrical or other equipment which may constitute a source of ignition of flammable vapours shall not be permitted in these compartments except as permitted in sub-clause (23) of this clause.

(22) Accumulator batteries shall not be located in sleeping quarters except where hermetically sealed to the satisfaction of the Chief Surveyor.

(23) No electrical equipment shall be installed in any space where flammable mixtures are liable to collect including those on board tankers or in compartments assigned principally to accumulator batteries, in paint lockers, acetylene stores or similar spaces, unless the Chief Surveyor is satisfied that such equipment is:

- (a) essential for operational purposes;
- (b) of a type which will not ignite the mixture concerned;
- (c) appropriate to the space concerned; and
- (d) appropriately certified for safe usage in the dusts, vapours or gases likely to be encountered.

(24) In a passenger ship, distribution systems shall be so arranged that fire in any main vertical zone will not interfere

with services essential for safety in any other such zone. This requirement will be met if main and emergency feeders passing through any such zone are separated both vertically and horizontally as widely as is practicable.

67. Spare Parts and Tools— Every ship shall be provided with an adequate quantity of replacements for those parts of the ship's electrical equipment and installations which, having regard to the intended service of the ship, it would be essential for the safety of the ship and of persons on board to replace in the event of failure while the ship is at sea, together with such tools as are necessary for the fitting of these replacements.

PART VII

FIRE PROTECTION

Section A

68. Basic Principles— The following basic principles underlie the requirements of this Part of the Code.

(a) division of ship into main vertical zones by thermal and structural boundaries;

(b) separation of accommodation spaces from the remainder of the ship by thermal and structural boundaries;

(c) restricted use of combustible materials;

(d) containment of fire in the space of origin.

SECTION B—PASSENGER SHIPS

69. Structure—(1) The hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material. For the purpose of applying the definition of steel or other equivalent material the "applicable fire exposure" shall be according to the integrity and insulation standards given in the tables of clauses 72 and 73 of this Code. For example where divisions such as decks or sides and ends of deckhouses are permitted to have "B-0" fire integrity, the "applicable fire exposure" shall be half an hour.

(2) However, in cases where any part of the structure is of aluminium alloy, the following shall apply:

(a) The insulation of aluminium alloy components of "A" or "B" class divisions, except structure which, in the opinion of the Chief Surveyor, is non-load-bearing, shall be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during the applicable fire exposure to the standard fire test.

(b) Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and liferaft stowage, launching and embarkation areas, and "A" and "B" class divisions to ensure:

(i) that for such members supporting lifeboat and liferaft areas and "A" class divisions, the temperature rise limitation specified in sub-clause (2)(a) of this clause shall apply at the end of one hour; and

(ii) that for such members required to support "B" class divisions, the temperature rise limitation specified in sub-clause (2)(a) of this clause shall apply at the end of half an hour.

(3) Crowns and casings of machinery spaces of category A shall be of steel construction adequately insulated and openings therein, if any, shall be suitably arranged and protected to prevent the spread of fire.

70. Main Vertical Zones and Horizontal Zones—(1) For ships carrying more than 36 passengers, the hull, superstructure and deckhouses shall be subdivided into main vertical zones by "A" class divisions. Steps and recesses shall be kept to a minimum, but where they are necessary they shall also be "A" class divisions. These divisions shall have insulation values in accordance with tables in clause 72 of this Code.

(2) For ships carrying not more than 36 passengers, the hull, superstructure and deckhouses in way of accommodation and

service spaces shall be sub-divided into main vertical zones by "A" class divisions. These divisions shall have insulation values in accordance with tables in clause 73 of this Code.

(3) As far as practicable, the bulkheads forming the boundaries of the main vertical zones above the bulkhead deck shall be in line with watertight sub-division bulkheads situated immediately below the bulkhead deck. Such bulkheads shall extend from deck to deck and to the shell or other boundaries.

(4) Where a main vertical zone is subdivided by horizontal "A" class divisions into horizontal zones for the purpose of providing an appropriate barrier between sprinklered and non-sprinklered zones of the ship, the divisions shall extend between adjacent main vertical zone bulkheads and to the shell or exterior boundaries of the ship and shall be insulated in accordance with the fire insulation and integrity values given in table 72.3 or in table 73.2 of this Code.

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

However, in a ship with special category spaces, any such space shall comply with the applicable provisions of clause 82 of this Code and in so far as such compliance would be inconsistent with compliance with other requirements of this part, the requirements of clause 82 of this Code shall prevail.

71. Bulkheads Within a Main Vertical Zone—(1) For ships carrying more than 36 passengers all bulkheads which are not required to be "A" class divisions shall be at least "B" class or "C" class divisions as prescribed in the tables in clause 73 of this Code.

(3) All such divisions may be faced with combustible materials in accordance with the provisions of clause 80 of this Code.

(4) All corridor bulkheads where not required to be "A" class shall be "B" class divisions which shall extend from deck to deck except:

(a) when continuous "B" class ceilings or linings are fitted on both sides of the bulkhead, the portion of the bulkhead behind the continuous ceiling or lining shall be of material which, in thickness and composition, is acceptable in the construction of "B" class divisions but which shall be required to meet "B" class integrity standards only in so far as is reasonable and practicable in the opinion of the Chief Surveyor.

(b) in the case of a ship protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989 the corridor bulkheads of "B" class materials may terminate at a ceiling in the corridor provided such a ceiling is of material which, in thickness and composition, is acceptable in the construction of "B" class divisions. Notwithstanding the requirements of clauses 72 and 73 of this Code, such bulkheads and ceilings shall be required to meet "B" class integrity standards only in so far as is reasonable and practicable in the opinion of the Chief Surveyor. All doors and frames in such bulkheads shall be of non-combustible materials and shall be so constructed and erected as to provide substantial fire resistance to the satisfaction of the Chief Surveyor.

(5) All bulkheads required to be "B" class divisions, except corridor bulkheads, shall extend from deck to deck and to the shell or other boundaries unless continuous "B" class ceilings or linings are fitted on both sides of the bulkhead, in which case the bulkhead may terminate at the continuous ceiling or lining.

72. Fire Integrity of Bulkheads and Decks in Ships Carrying More than 36 Passengers—(1) In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in this part, the

minimum fire integrity of all bulkheads and decks shall be as prescribed in tables 72.1 to 72.4. Where, due to any particular structural arrangements in the ship, difficulty is experienced in determining from the tables the minimum fire integrity value of any divisions, such values shall be determined to the satisfaction of the Chief Surveyor.

(2) The following requirements shall govern application of the tables;

(a) Table 72.1 shall apply to bulkheads bounding main vertical zones or horizontal zones.

Table 72.2 shall apply to bulkheads not bounding either main vertical zones or horizontal zones.

Table 72.3 shall apply to decks forming steps in main vertical zones or bounding horizontal zones.

Table 72.4 shall apply to decks not forming steps in main vertical zones nor bounding horizontal zones.

(b) For determining the appropriate fire integrity standards to be applied to boundaries between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (14) below. Where the contents and use of a space are such that there is a doubt as to its classification for the purpose of this regulation, it shall be treated as a space within the relevant category having the most stringent boundary requirements. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) Control Stations

Spaces containing emergency sources of power and lighting. Wheelhouse and chartroom.

Spaces containing the ship's radio equipment.

Fire-extinguishing rooms, fire control rooms and fire-recording stations.

Control room for propulsion machinery when located outside the propulsion machinery space.

Spaces containing centralised fire alarm equipment.

Spaces containing centralised emergency public address system stations and equipment.

(2) Stairways

Interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) for passengers and crew and enclosures thereto.

In this connection a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door.

(3) Corridors

Passenger and crew corridors and lobbies.

(4) Lifeboat and liferaft handling and embarkation stations

Open deck spaces and enclosed promenades forming lifeboat and liferaft embarkation and lowering stations.

(5) Open Deck Spaces

Open deck spaces and enclosed promenades clear of lifeboat and liferaft embarkation and lowering stations.

Air spaces (the space outside superstructures and deckhouses.)

(6) Accommodation spaces of minor fire risk

Cabins containing furniture and furnishings of restricted fire risk.

Offices and dispensaries containing furniture and furnishings of restricted fire risk.

Public spaces containing furniture and furnishings of restricted fire risk and having a deck area of less than 50m².

(7) Accommodation spaces of moderate fire risk

Spaces as in category (6) above but containing furniture and furnishings of other than restricted fire risk

Public spaces containing furniture and furnishings of restricted fire risk and having a deck area of 50m² or more.

Isolated lockers and small store-rooms in accommodation spaces.

Sale shops.

Motion picture projection and film stowage rooms.

Diet kitchens (containing no open flame).

Cleaning gear lockers (in which flammable liquids are not stowed).

Laboratories (in which flammable liquids are not stowed).

Pharmacies.

Small drying rooms (having a deck area of 4m² or less).

Specie rooms.

(8) Accommodation spaces of greater fire risk

Public spaces containing furniture and furnishings of other than restricted fire risk and having a deck area of 50m² or more.

Barber shops and beauty parlours.

(9) Sanitary and similar spaces

Communal sanitary facilities, showers, baths, water closets, etc.

Small laundry rooms.

Indoor swimming pool area.

Operating rooms.

Isolated pantries containing no cooking appliances in accommodation spaces.

Private sanitary facilities shall be considered a portion of the space in which they are located.

(10) Tanks, voids and auxiliary machinery spaces having little or no fire risk

Water tanks forming part of the ship's structure.

Voids and cofferdams.

Auxiliary machinery spaces which do not contain machinery having a pressure lubrication system and where storage of combustibles is prohibited, such as:

ventilation and air-conditioning rooms; windlass room; steering gear room; stabiliser equipment room; electrical propulsion motor room; rooms containing section switchboards and purely electrical equipment other than oil-filled electrical transformers (above 10kVA); shaft alleys and pipe tunnels; spaces for pumps and refrigeration machinery (not handling or using flammable liquids).

Closed trunks serving the spaces listed above.

Other closed trunks such as pipe and cable trunks.

(11) Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk

Cargo oil tanks.

Cargo holds, trunkways and hatchways.

Refrigerated chambers.

Oil fuel tanks (where installed in a separate space with no machinery).

Shaft alleys and pipe tunnels allowing storage of combustibles

Auxiliary machinery spaces as in category (10) which contain machinery having a pressure lubrication system or where storage of combustibles is permitted.

Oil fuel filling stations.

Spaces containing oil-filled electrical transformers (above 10kVA).

Spaces containing turbine and reciprocating steam engine driven auxiliary generators and small internal combustion engines of power output up to 110kW driving emergency generators, sprinkler, drencher or fire pumps, bilge pumps, etc.

Special category spaces (tables 72.1 and 72.3 only apply).

Closed trunks serving the spaces listed above.

(12) Machinery spaces and main galleys

Main propulsion machinery rooms (other than electric propulsion motor rooms) and boiler rooms.

Auxiliary machinery spaces other than those in categories (10) and (11) which contain internal combustion machinery or other oil-burning, heating or pumping units.

Main galleys and annexes.

Trunks and casings to the spaces listed above.

(13) Store-rooms, workshops, pantries, etc.

Main pantries not annexed to galleys.

Main laundry.

Large drying rooms (having a deck area of more than 4m²).

Miscellaneous stores.

Mail and baggage rooms.

Garbage rooms.

Workshops (not part of machinery spaces, galleys, etc.)

(14) Other spaces in which flammable liquids are stowed

Lamp rooms.

Paint rooms.

Store rooms containing flammable liquids (including dyes, medicines, etc).

Laboratories (in which flammable liquids are stowed).

(c) Where a single value is shown for the fire integrity of a boundary between two spaces, that value shall apply in all cases.

(d) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliance) Regulations 1989 or between such zones neither of which is so protected, the higher of the two values given in the tables shall apply.

(e) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliance) Regulations 1989 or between such zones both of which are so protected, the lesser of the two values given in the tables shall apply. Where a sprinklered zone and a non-sprinklered zone meet within accommodation and service spaces, the higher of the two values given in the tables shall apply to the division between the zones.

(f) Notwithstanding the provisions of clause 71 of this Code there are no special requirements for material or integrity of boundaries where only a dash appears in the tables.

(g) The Chief Surveyor shall determine in respect of category (5) spaces whether the insulation values in table 72.1 or 72.2 shall apply to ends of deckhouses and superstructures, and whether the insulation values in table 72.3 or 72.4 shall apply to weather decks. In no case shall the requirements of category (5) of tables 72.1 to 72.4 necessitate enclosure of spaces which in the opinion of the Chief Surveyor need not be enclosed.

(3) Continuous "B" class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing wholly or in part, to the required insulation and integrity of a division.

(4) In approving structural fire protection details, the Chief

Surveyor shall have regard to the risk of heat transmission at intersections and terminal points of required thermal barriers.

TABLE 72.1—BULKHEADS BOUNDING MAIN VERTICAL ZONES OR HORIZONTAL ZONES

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	A-60	A-30	A-30	A-0	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Corridors (3)			A-0	A-0	A-0	A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-30	A-60	A-15 A-0	A-60
Lifeboat and liferaft handling and embarkation stations (4)				—	—	A-0	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-60
Open deck spaces (5)					—	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk (6)						A-15 A-0	A-30 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-30	A-15 A-0	A-30
Accommodation spaces of moderate fire risk (7)							A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-30 A-0	A-60
Accommodation spaces of greater fire risk (8)								A-60 A-15	A-0	A-0	A-60 A-15	A-60	A-30 A-0	A-60
Sanitary and similar spaces (9)									A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)										A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)											A-0	A-60	A-0	A-60
Machinery spaces and main galleys (12)												A-60	A-30 ^b A-15	A-60
Store-rooms, workshops, pantries etc. (13)													A-0	A-30
Other spaces in which flammable liquids are stowed (14)														A-60

See notes under Table 72.4.

TABLE 72.2—BULKHEADS NOT BOUNDING EITHER MAIN VERTICAL ZONES OR HORIZONTAL ZONES

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations (1)	B-0 ^a	A-0	A-0	A-0	A-0 B-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Stairways (2)		A-0 ^a	A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15	A-30	A-15 A-0	A-30
Corridors (3)			C	A-0	A-0 B-0	B-0	B-15 B-0	B-15 B-0	B-0	A-0	A-15	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations (4)				—	—	A-0	A-0	A-0	A-0	A-0	A-0	A-15	A-0	A-15 A-0
Open deck spaces (5)					—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0 B-0
Accommodation spaces of minor fire risk (6)						B-0 C	B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-30	A-0	A-30 A-0
Accommodation spaces of moderate fire risk (7)							B-15 C	B-15 C	B-0 C	A-0	A-15 A-0	A-60	A-15 A-0	A-60 A-15
Accommodation spaces of greater fire risk (8)								B-15 C	B-0 C	A-0	A-30 A-0	A-60	A-15 A-0	A-60 A-15
Sanitary and similar spaces (9)									C	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk (10)										A-0 ^a	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk (11)											A-0 ^a	A-0	A-0	A-30 ^b A-15
Machinery spaces and main galleys (12)												A-0 ^a	A-0	A-60
Store-rooms, workshops, pantries etc. (13)													A-0 ^a	A-0
Other spaces in which flammable liquids are stowed (14)														A-30 ^b A-15

See notes under Table 72.4.

TABLE 72.3—DECKS FORMING STEPS IN MAIN VERTICAL ZONES OR BOUNDING HORIZONTAL ZONES

Space below ↓	Space above→	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-60	A-60	A-30	A-0	A-0	A-15	A-30	A-60	A-0	A-0	A-30	A-60	A-15	A-60
Stairways	(2)	A-15	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Corridors	(3)	A-30	A-0	A-0	A-0	A-0	A-0	A-15 A-0	A-15 A-0	A-0	A-0	A-0	A-60	A-0	A-60
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-30 A-0	A-15 A-0	A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-15 A-0	A-15	A-0	A-15
Accommodation spaces of moderate fire risk	(7)	A-60	A-60 A-15	A-30 A-0	A-15 A-0	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-30 A-0	A-30	A-0	A-30
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-15	A-60 A-15	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30 A-0	A-60	A-15 A-0	A-60
Sanitary and similar spaces	(9)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, special category spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60	A-60	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-0	A-30	A-30 ^b A-0	A-30
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60
Store-rooms, workshops, pantries etc.	(13)	A-60	A-60 A-15	A-30 A-0	A-15	A-0	A-15 A-0	A-30 A-0	A-60 A-15	A-0	A-0	A-0	A-30	A-0	A-30
Other spaces in which flammable liquids are stowed	(14)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-60	A-60	A-60	A-60

See notes under Table 72.4.

TABLE 72.4—DECKS NOT FORMING STEPS IN MAIN VERTICAL ZONES NOR BOUNDING HORIZONTAL ZONES

Space below ↓	Space above→	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Control stations	(1)	A-30 A-0	A-30 A-0	A-15 A-0	A-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0	A-60	A-0	A-60 A-15
Stairways	(2)	A-0	A-0	A-0	A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0	A-0	A-30	A-0	A-30 A-0
Corridors	(3)	A-15 A-0	A-0	A-0 ^a B-0 ^a	A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-15 B-0	A-0 B-0	A-0	A-0	A-30	A-0	A-30 A-0
Lifeboat and liferaft handling and embarkation stations	(4)	A-0	A-0	A-0	A-0	—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Open deck spaces	(5)	A-0	A-0	A-0 B-0	A-0	—	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0 B-0	A-0
Accommodation spaces of minor fire risk	(6)	A-60	A-15 A-0	A-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-15 A-0	A-0	A-15 A-0
Accommodation spaces of moderate fire risk	(7)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-0 B-0	A-15 B-0	A-30 B-0	A-0 B-0	A-0	A-15 A-0	A-30 A-0	A-0	A-30 A-0
Accommodation spaces of greater fire risk	(8)	A-60	A-60 A-15	A-60 A-0	A-30 A-0	A-0 B-0	A-15 B-0	A-30 B-0	A-60 B-0	A-0 B-0	A-0	A-30 A-0	A-30 A-0	A-0	A-30 A-0
Sanitary spaces and similar spaces	(9)	A-0	A-0	A-0 B-0	A-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0 B-0	A-0	A-0	A-0	A-0	A-0
Tanks, voids and auxiliary machinery spaces having little or no fire risk	(10)	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0	A-0 ^a	A-0	A-0	A-0	A-0
Auxiliary machinery spaces, cargo spaces, cargo and other oil tanks and other similar spaces of moderate fire risk	(11)	A-60	A-60 A-15	A-60 A-15	A-30 A-0	A-0	A-0	A-15 A-0	A-30 A-0	A-0	A-0	A-0 ^a	A-0	A-0	A-30 ^b A-15
Machinery spaces and main galleys	(12)	A-60	A-60	A-60	A-60	A-0	A-60	A-60	A-60	A-0	A-0	A-30	A-30 ^a	A-0	A-60
Store-rooms, workshops, pantries etc.	(13)	A-60	A-30 A-0	A-15 A-0	A-15 A-0	A-0 B-0	A-15 A-0	A-30 A-0	A-30 A-0	A-0 B-0	A-0	A-0	A-0	A-0	A-15 ^b A-0
Other spaces in which flammable liquids are stowed	(14)	A-60	A-60 A-30	A-60 A-30	A-60	A-0	A-30 A-0	A-60 A-15	A-60 A-15	A-0	A-0	A-30 ^b A-0	A-30 ^b A-0	A-0	A-30 ^b A-0

Notes: To be applied to tables 72.1 to 72.4 as appropriate.

a Where adjacent spaces are in the same numerical category and superscript ^a appears, a bulkhead or deck between such spaces need not be fitted if deemed unnecessary by the Chief Surveyor. For example, in category (12) a bulkhead need not be required between a galley and its

annexed pantries provided the pantry bulkheads and decks maintain the integrity of the galley boundaries. A bulkhead is however, required between a galley and a machinery space even though both spaces are in category (12).

b Where superscript ^b appears the lesser insulation value may be permitted only if at least one of the adjoining

spaces is protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989.

73. Fire Integrity of Bulkheads and Decks in Ships Carrying Not More Than 36 Passengers—(1) In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in this part, the minimum fire integrity of bulkheads and decks shall be as prescribed in table 73.1 and table 73.2.

(2) The following requirements shall govern application of the tables:

(a) Tables 73.1 and 73.2 shall apply respectively to the bulkheads and decks separating adjacent spaces.

(b) For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (11) below. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) Control Stations

Spaces containing emergency sources of power and lighting.

Wheelhouse and chartroom.

Spaces containing the ship's radio equipment.

Fire-extinguishing rooms, fire control rooms and fire-recording stations.

Control room for propulsion machinery when located outside the propulsion machinery space.

Spaces containing centralised fire alarm equipment.

(2) Corridors

Passenger and crew corridors and lobbies.

(3) Accommodation spaces

Spaces as defined in clause 1 of this Code, excluding corridors.

(4) Stairways

Interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto.

In this connection a stairway which is enclosed at only one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service Spaces (low risk)

Lockers and store-rooms having areas of less than 2m², drying rooms and laundries.

(6) Machinery Spaces of Category A

Spaces as defined in clause 1 of this Code.

(7) Other Machinery Spaces

Spaces as defined in clause 1 of this Code excluding machinery spaces of category A.

(8) Cargo Spaces

All spaces used for cargo (including cargo oil tanks) and trunkways and hatchways to such spaces, other than special category spaces.

(9) Service Spaces (high risk)

Galleys, pantries, containing cooking appliances, paint and lamp rooms, lockers and store-rooms having areas of 2m² or more and workshops other than those forming part of the machinery spaces.

(10) Open decks

Open deck spaces and enclosed promenades having no fire risk. Air spaces (the space outside superstructures and deckhouses).

(11) Special category spaces

Spaces as defined in clause 1 of this Code.

(c) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is not protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989 or between such zones neither of which is so protected, the higher of the two values given in the tables shall apply.

(d) In determining the applicable fire integrity standard of a boundary between two spaces within a main vertical zone or horizontal zone which is protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989 or between such zones both of which are so protected, the lesser of the two values given in the tables shall apply. Where a sprinklered zone and a non-sprinklered zone meet within accommodation and service spaces, the higher of the two values given in the tables shall apply to the division between the zones.

(3) Continuous "B" class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

(4) External boundaries which are required in clause 69(1) of this Code to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles provided that there is no requirement for such boundaries to have "A" class integrity elsewhere in this part. Similarly, in such boundaries which are not required to have "A" class integrity, doors may be of materials to the satisfaction of the Chief Surveyor.

TABLE 73.1—FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Control stations	(1)	A-0 ^c	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*	A-60
Corridors	(2)		C ^c	B-0 ^c	A-0 ^a B-0 ^c	B-0 ^c	A-60	A-0	A-0	A-15 A-0 ^d	*	A-15
Accommodation spaces	(3)			C ^c	A-0 ^a B-0 ^c	B-0 ^c	A-60	A-0	A-0	A-15 A-0 ^d	*	A-30 A-0 ^d
Stairways	(4)				A-0 ^a B-0 ^c	A-0 ^a B-0 ^c	A-60	A-0	A-0	A-15 A-0 ^d	*	A-15
Service spaces (low risk)	(5)					C ^c	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A	(6)						*	A-0	A-0	A-60	*	A-60
Other machinery spaces	(7)							A-0 ^b	A-0	A-0	*	A-0
Cargo spaces	(8)								*	A-0	*	A-0
Service spaces (high risk)	(9)									A-0 ^b	*	A-30
Open decks	(10)											A-0
Special category spaces	(11)											A-0

TABLE 73.2—FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES

Space below ↓ Space above →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Control stations	(1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*	A-30
Corridors	(2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Accommodation spaces	(3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30 A-0 ^d
Stairways	(4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*	A-0
Service spaces (low risk)	(5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A	(6)	A-60	A-60	A-60	A-60	A-60	*	A-60 ^f	A-30	A-60	*	A-60
Other machinery spaces	(7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*	A-0
Cargo spaces	(8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*	A-0
Service spaces (high risk)	(9)	A-60	A-30 A-0 ^d	A-30 A-0 ^d	A-30 A-0 ^d	A-0	A-60	A-0	A-0	A-0	*	A-30
Open decks	(10)	*	*	*	*	*	*	*	*	*	—	A-0
Special category spaces	(11)	A-60	A-15	A-30 A-0 ^d	A-15	A-0	A-30	A-0	A-0	A-30	A-0	A-0

Notes: To be applied to both tables 73.1 and 73.2, as appropriate.

a For clarification as to which applies see clauses 71 and 74 of this Code.

b Where spaces are of the same numerical category and superscript ^b appears, a bulkhead or deck of the ratings shown in the tables is only required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an A-O^b bulkhead.

c Bulkheads separating the wheelhouse and chartroom from each other may be "B-O" rating.

d See subclauses (2)(c) and 2(d) of this clause.

e For the application of clause 70(2) of this Code, "B-O" and "C", where appearing in table 73.1, shall be read as "A-O".

f Fire insulation need not be fitted if the machinery space of category (7), in the opinion of the Chief Surveyor, has little or no fire risk.

* Where an asterisk appears in the tables, the division is required to be of steel or other equivalent material but is not required to be of "A" class standard. For the application of clause 70(2) of this Code an asterisk, where appearing in table 73.1 except for categories (8) and (10), shall be read as "A-O".

74. Protection of Stairways and Lifts in Accommodation and Service Spaces—(1) All stairways shall be of steel frame construction except where the Chief Surveyor sanctions the use of other equivalent material, and shall be within enclosures formed of "A" class divisions, with positive means of closure at all openings, except that:

(a) a stairway connecting only two decks need not be enclosed, provided the integrity of the deck is maintained by proper bulkheads or doors in one 'tweendeck space. When a stairway is closed in one 'tweendeck space, the stairway enclosure shall be protected in accordance with the tables for decks in clauses 72 or 73 of this Code.

(b) Stairway enclosures shall have direct communication

with the corridors and be of sufficient area to prevent congestion, having in view the number of persons likely to use them in an emergency. In so far as is practicable, stairway enclosures shall not give direct access to cabins, service lockers, or other enclosed spaces containing combustibles in which a fire is likely to originate.

(3) Lift trunks shall be so fitted as to prevent the passage of smoke and flame from one 'tweendeck to another and shall be provided with means of closing so as to permit the control of draught and smoke.

75. Openings in "A" Class Divisions—(1) Except for hatches between cargo, special category, store, and baggage spaces, and between such spaces and the weather decks, all openings shall be provided with permanently attached means of closing which shall be at least as effective for resisting fires as the divisions in which they are fitted.

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

(3) It shall be possible for each door to be opened and closed from each side of the bulkhead by one person only.

(4) Fire doors in main vertical zone bulkheads and stairway enclosures, other than power-operated watertight doors and those which are normally locked, shall be of the self-closing type capable of closing against an inclination of 3.5° opposing closure. The speed of door closure shall, if necessary, be controlled so as to prevent undue danger to persons. All such doors, except those that are normally closed, shall be capable of release from a control station, either simultaneously or in groups, and also individually from a position at the door. The release mechanism shall be so designed that the door will automatically close in the event of disruption of the control system; however, approved power-operated watertight doors will be considered acceptable for this purpose. Hold-back hooks not subject to control station release will not be permitted. When double swing doors are permitted, they shall have a latch arrangement which is automatically engaged by the operation of the door release system.

(5) Where a space is protected by an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989 or fitted with a continuous "B" class ceiling, openings in decks not forming steps in main vertical zones nor bounding horizontal zones shall be closed reasonably tight and such decks shall meet the "A" class integrity requirements in so far as is reasonable and practicable in the opinion of the Chief Surveyor.

(6) The requirements for "A" class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles. Similarly, the requirements for "A" class integrity shall not apply to exterior doors in superstructures and deckhouses.

76. Openings in "B" Class Divisions—(1) Doors and door frames in "B" class divisions and means of securing them shall provide a method of closure which shall have resistance to fire as far as practicable equivalent to that of the divisions except that ventilation openings may be permitted in the lower portion of such doors. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05m². When such opening is cut in a door it shall be fitted with a grill made of non-combustible material. Doors shall be non-combustible.

(2) The requirements for "B" class integrity of the outer boundaries of a ship shall not apply to glass partitions, windows and sidescuttles. Similarly, the requirements for "B" class integrity shall not apply to exterior doors in superstructures and deckhouses. For ships carrying not more

than 36 passengers, the Chief Surveyor may permit the use of combustible materials in doors separating cabins from the individual interior sanitary spaces such as showers.

(3) Where an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989 is fitted:

(a) openings in decks not forming steps in main vertical zones nor bounding horizontal zones shall be closed reasonably tight and such decks shall meet the "B" class integrity requirements in so far as is reasonable and practicable in the opinion of the Chief Surveyor.

(b) openings in corridor bulkheads of "B" class materials shall be protected in accordance with the provisions of clause 71 of this Code.

77. Ventilation Systems in Passenger Ships Carrying More than 36 Passengers—(1) In general, the ventilation fans shall be so disposed that the ducts reaching the various spaces remain within the main vertical zone.

(2) Where ventilation systems penetrate decks, precautions shall be taken, in addition to those relating to the fire integrity of the deck required by clause 75(5) and clause 105(1) of this Code, to reduce the likelihood of smoke and hot gases passing from one 'tweendeck space to another through the system. In addition to insulation requirements contained in this Code, vertical ducts shall, if necessary, be insulated as required by the appropriate tables in clause 72.

(3) Except in cargo spaces, ventilation ducts shall be constructed of the following materials:

(a) ducts not less than 0.075m² in sectional area and all vertical ducts serving more than a single 'tweendeck space shall be constructed of steel or other equivalent material;

(b) ducts less than 0.075m² in sectional area other than the vertical ducts referred to in paragraph (a) above shall be constructed of non-combustible materials. Where such ducts penetrate "A" or "B" class divisions due regard shall be given to ensuring the fire integrity of the division;

(c) short lengths of duct, not in general exceeding 0.02m² in sectional area nor 2m in length, need not be non-combustible provided that all of the following conditions are met:

(i) the duct is constructed of a material of low fire risk to the satisfaction of the Chief Surveyor;

(ii) the duct is used only at the terminal end of the ventilation system; and

(iii) the duct is not located closer than 600mm measured along its length to a penetration of an "A" or "B" class division, including continuous "B" class ceilings.

(4) Where the ventilation ducts with a free-sectional area exceeding 0.02m² pass through class "A" bulkheads or decks, the opening shall be lined with a steel sheet sleeve unless the ducts passing through the bulkheads or decks are of steel in the vicinity of passage through the deck or bulkhead and the ducts and sleeves shall comply in this part with the following:

(a) The sleeves shall have a thickness of at least 3mm and a length of at least 900mm. When passing through bulkheads, this length shall be divided preferably into 450mm on each side of the bulkhead. These ducts, or sleeves lining such ducts, shall be provided with fire insulation. The insulation shall have at least the same fire integrity as the bulkhead or deck through which the duct passes. Equivalent penetration protection may be provided to the satisfaction of the Chief Surveyor.

(b) Ducts with a free cross-sectional area exceeding 0.075m² shall be fitted with fire dampers in addition to the requirements of paragraph (a) above. The fire damper shall operate automatically but shall also be capable of being closed manually from both sides of the bulkhead or deck. The damper shall be provided with an indicator which shows whether the damper is open or closed. Fire dampers are not required, however, where ducts pass through spaces surrounded by "A"

class divisions, without serving those spaces, provided those ducts have the same fire integrity as the divisions which they pierce.

(5) Ducts provided for the ventilation of machinery spaces of category A, galleys, car deck spaces, ro-ro cargo spaces or special category spaces shall not pass through accommodation spaces, service spaces or control stations unless they comply with the conditions specified in subparagraphs (a)(i) to (a)(iv) or (b)(i) and (b)(ii) below:

- (a)(i) the ducts are constructed of steel having a thickness of at least 3mm and 5mm for ducts the widths or diameters of which are up to and including 300mm and 760mm and over respectively and, in the case of such ducts, the widths or diameters of which are between 300mm and 760mm having a thickness to be obtained by interpolation;
- (ii) the ducts are suitably supported and stiffened;
- (iii) the ducts are fitted with automatic fire dampers close to the boundaries penetrated; and
- (iv) the ducts are insulated to "A-60" standard from the machinery spaces, galleys, car deck spaces, ro-ro cargo spaces or special category spaces to a point at least 5m beyond each fire damper;

or

- (b)(i) the ducts are constructed of steel in accordance with sub-clause (5)(a)(i) and (5)(a)(ii) of this clause, and
- (ii) the ducts are insulated to "A-60" standard throughout the accommodation spaces, service spaces or control stations;

except that penetrations of main zone divisions shall also comply with the requirements of sub-clause (10) of this clause.

(6) Ducts provided for ventilation to accommodation spaces, service spaces or control stations shall not pass through machinery spaces of category A, galleys, car deck spaces, ro-ro cargo spaces or special category spaces unless they comply with the conditions specified in subparagraphs (a)(i) to (a)(iii) or (b)(i) and (b)(ii) below:

- (a)(i) the ducts where they pass through a machinery space of category A, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with sub-clauses (5)(a)(i) and (5)(a)(ii) of this clause.
- (ii) automatic fire dampers are fitted close to the boundaries penetrated; and
- (iii) the integrity of the machinery space, galley, car deck space, ro-ro cargo space or special category space boundaries is maintained at the penetrations;

or

- (b)(i) the ducts where they pass through a machinery space of category A, galley, car deck space, ro-ro cargo space or special category space are constructed of steel in accordance with sub-clauses (5)(a)(i) and (5)(a)(ii); of this clause and
- (ii) the ducts are insulated to "A-60" standard within the machinery space, galley, car deck space, ro-ro cargo space or special category space;

except that penetrations of main zone divisions shall also comply with the requirements of sub-clause (10) of this clause.

(7) Ventilation ducts with a free cross-sectional area exceeding 0.02m² passing through "B" class bulkheads shall be lined with steel sheet sleeves of 900mm in length divided preferably into 450mm on each side of the bulkheads unless the duct is of steel for this length.

(8) Such measures as are practicable shall be taken in respect of control stations outside machinery spaces in order to ensure that ventilation, visibility and freedom from smoke are maintained, so that in the event of fire the machinery and

equipment contained therein may be supervised and continue to function effectively. Alternative and separate means of air supply shall be provided; air inlets of the two sources of supply shall be so disposed that the risk of both inlets drawing in smoke simultaneously is minimised. At the discretion of the Chief Surveyor, such requirements need not apply to control stations situated on, and opening on to, an open deck, or where local closing arrangements would be equally effective.

(9) Where they pass through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be constructed of "A" class divisions. Each exhaust duct shall be fitted with:

- (a) a grease trap readily removable for cleaning;
- (b) a fire damper located in the lower end of the duct;
- (c) arrangements, operable from within the galley, for shutting off the exhaust fans; and
- (d) fixed means for extinguishing a fire within the duct.

(10) Where it is necessary that a ventilation duct passes through a main vertical zone division, a fail-safe automatic closing fire damper shall be fitted adjacent to the division. The damper shall also be capable of being manually closed from each side of the division. The operating position shall be readily accessible and be marked in red light-reflecting colour. The duct between the division and the damper shall be of steel or other equivalent material and, if necessary, insulated to comply with the requirements of clause 105(1) of this Code. The damper shall be fitted on at least one side of the division with a visible indicator showing whether the damper is in the open position.

(11) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated.

(12) Where a stairway enclosure is ventilated, the duct or ducts shall be taken from the fan room independently of other ducts in the ventilation system and shall not serve any other space.

(13) All power ventilation, except machinery space and cargo space ventilation and any alternative system which may be required under subclause (8) of this clause, shall be fitted with controls so grouped that all fans may be stopped from either of two separate positions which shall be situated as far apart as practicable. Controls provided for the power ventilation serving machinery spaces shall also be grouped so as to be operable from two positions, one of which shall be outside such spaces. Fans serving power ventilation systems to cargo spaces shall be capable of being stopped from a safe position outside such spaces.

78. Ventilation Systems in Passenger Ships Carrying Not More than 36 Passengers—(1) The ventilation system of a passenger ship carrying not more than 36 passengers shall, in addition to this clause, also be in compliance with the requirements of clause 77, subclauses (4) to (11) of this Code.

(2) Ventilation ducts shall be of non-combustible material. Short ducts, however, not generally exceeding 2m in length and with a cross-section not exceeding 0.02m² need not be non-combustible, subject to the following conditions:

(a) these ducts shall be of a material which, in the opinion of the Chief Surveyor, has a low fire risk;

(b) they may only be used at the end of the ventilation device;

(c) they shall not be situated less than 600mm, measured along the duct, from an opening in an "A" or "B" class division including continuous "B" class ceilings.

(3) Power ventilation of accommodation spaces, service spaces, cargo spaces, control stations and machinery spaces shall be capable of being stopped from an easily accessible position outside the space being served. This position should not be readily cut off in the event of a fire in the spaces served.

The means provided for stopping the power ventilation of the machinery spaces shall be entirely separate from the means provided for stopping ventilation of other spaces.

79. Windows and Sidescuttles—(1) All windows and sidescuttles in bulkheads within accommodation and service spaces and control stations other than those to which the provisions of clause 75(6) and of clause 76(2) of this Code apply, shall be so constructed as to preserve the integrity requirements of the type of bulkheads in which they are fitted.

(2) Notwithstanding the requirements of the tables in clauses 72 and 73 of this Code:

(a) all windows and sidescuttles in bulkheads separating accommodation and service spaces and control stations from weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bead or angle;

(b) special attention shall be given to the fire integrity of windows facing open or enclosed lifeboat and liferaft embarkation areas and to the fire integrity of windows situated below such areas in such a position that their failure during a fire would impede the launching of, or embarkation into, lifeboats or liferafts.

80. Restricted Use of Combustible Materials—(1) Except in cargo spaces, mail rooms, baggage rooms, or refrigerated compartments of service spaces, all linings, grounds, ceilings and insulations shall be of non-combustible materials. Partial bulkheads or decks used to subdivide a space for utility or artistic treatment shall also be of non-combustible material.

(2) Vapour barriers and adhesives used in conjunction with insulation, as well as insulation of pipe fittings, for cold service systems need not be non-combustible, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have qualities of resistance to the propagation of flame to the satisfaction of the Chief Surveyor.

(3) The following surfaces shall have low flame-spread characteristics:

(a) exposed surfaces in corridors and stairway enclosures, and of bulkheads, wall and ceiling linings in all accommodation and service spaces and control stations;

(b) concealed or inaccessible spaces in accommodation, service spaces and control stations.

(4) The total volume of combustible facings, mouldings, decorations and veneers in any accommodation and service space shall not exceed a volume equivalent to 2.5mm veneer on the combined area of the walls and ceilings. In the case of ships fitted with an automatic sprinkler system complying with the provisions of the Shipping (Fire Appliances) Regulations 1989, the above volume may include some combustible material used for erection of "C" class divisions.

(5) Veneers used on surfaces and linings covered by the requirements of sub-clause (3) of this clause shall have a calorific value not exceeding 45MJ/m² of the area for the thickness used.

(6) Furniture in the corridors and stairway enclosures shall be kept to a minimum.

(7) Paints, varnishes and other finishes used on exposed interior surfaces shall not be capable of producing excessive quantities of smoke and toxic products.

(8) Primary deck coverings, if applied within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite, or give rise to toxic or explosive hazards at elevated temperatures.

81. Details of Construction—(1) In accommodation and service spaces, control stations, corridors and stairways:

(a) air spaces enclosed behind ceilings, panelling or linings shall be suitably divided by close-fitting draught stops not more than 14m apart;

(b) in the vertical direction, such enclosed air spaces,

including those behind linings of stairways, trunks, and similar structures shall be closed at each deck.

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

82. Protection of Special Category Spaces Above or Below the Bulkhead Deck—(1) The basic principle underlying the provisions of this clause is that as normal main vertical zoning may not be practicable in special category spaces, equivalent protection must be obtained in such spaces on the basis of a horizontal zone concept and by the provision of an efficient fixed fire-extinguishing system. Under this concept a horizontal zone for the purpose of this clause may include special category spaces on more than one deck provided that the total overall clear height for vehicles does not exceed 10m.

(2) The requirements of clauses 75, 77, 78 and clause 105 of this Code for maintaining the integrity of vertical zones shall be applied equally to decks and bulkheads forming the boundaries separating horizontal zones from each other and from the remainder of the ship.

(3) Boundary bulkheads of special category spaces shall be insulated as required for category (11) spaces in table 72.1 or in table 73.1 and the horizontal boundaries as required for category (11) spaces in table 73.3 or in table 73.2.

(4) Indicators shall be provided on the navigating bridge which shall indicate when any fire door leading to or from the special category spaces is closed.

(5) There shall be provided an effective power ventilation system for the special category spaces sufficient to give at least 10 air changes per hour. The system for such spaces shall be entirely separated from other ventilation systems and shall be operating at all times when vehicles are in such spaces.

(a) The Chief Surveyor may require an increased number of air changes when vehicles are being loaded and unloaded. Ventilation ducts serving special category spaces capable of being effectively sealed shall be separated for each such space. The system shall be capable of being controlled from a position outside such spaces.

(b) The ventilation shall be such as to prevent air stratification and the formation of air pockets.

(c) Means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.

(d) Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system in case of fire, taking into account the weather and sea conditions.

(e) Ventilation ducts, including dampers, shall be made of steel and their arrangement shall be to the satisfaction of the Chief Surveyor.

(6) Special category spaces above the bulkhead deck shall comply with the following additional provisions:

(a)(i) In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks consequent on the operation of the fixed pressure water-spraying system, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard.

(ii) However, where the inboard end of the scuppers would be below the subdivision load line at an angle of heel less than 15 degrees the scuppers or drains shall be led to separate drain tanks with arrangements for pumping accumulated water overboard.

(iii) Where scuppers or drains leading to drain tanks are fitted such scuppers or drains shall be fitted with

nonreturn valves in association with control valves operable from a deck above the enclosed special category space. Where a continuous middle line division or machinery casing is arranged in way of the enclosed special category space additional scuppers or drains shall be fitted adjacent to the division or casing.

(b)(i) On any deck or platform, if fitted, on which vehicles are carried and on which explosive vapours might be expected to accumulate, except platforms with openings of sufficient size permitting penetration of petrol gases downwards, equipment which may constitute a source of ignition of flammable vapours and, in particular, electrical equipment and wiring, shall be installed at least 450mm above the deck or platform. Electrical equipment installed at more than 450mm above the deck or platform shall be of a type so enclosed and protected as to prevent the escape of sparks. However, if the Chief Surveyor is satisfied that the installation of electrical equipment and wiring at less than 450mm above the deck or platform is necessary for the safe operation of the ship, such electrical equipment and wiring may be installed provided that it is of a type approved for use in an explosive petrol and air mixture.

(ii) Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

(7) Special category spaces below the bulkhead deck shall comply with the following additional provisions:

(a) In view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or tank top consequent on the operation of the fixed pressure water-spraying system, the Chief Surveyor may require pumping and drainage facilities to be provided additional to the requirements of Part IV of this Code relating to bilge pumping arrangements.

(b)(i) Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures. Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

(ii) Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

83. Protection of Cargo Spaces, other than Special Category Spaces, Intended for the Carriage of Motor Vehicles with Fuel in their Tanks for their Own Propulsion—(1) Every such space shall be provided with an effective power ventilation system sufficient to give at least 10 air changes per hour for ships carrying more than 36 passengers, and 6 air changes per hour for ships carrying not more than 36 passengers. The system for such cargo spaces shall be entirely separate from other ventilation systems. Ventilation ducts serving such cargo spaces capable of being effectively sealed shall be separated for each such space. The system shall be capable of being controlled from a position outside such spaces.

(a) The ventilation shall be such as to prevent air stratification and the formation of air pockets.

(b) Means shall be provided to indicate on the navigating bridge any loss or reduction of the required ventilating capacity.

(c) Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system in case of fire, taking into account the weather and sea conditions.

(d) Ventilation ducts, including dampers, shall be made of

steel and their arrangement shall be to the satisfaction of the Chief Surveyor.

(2) Electrical equipment and wiring, if fitted, shall be of a type suitable for use in explosive petrol and air mixtures. Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

(a) Electrical equipment and wiring, if installed in an exhaust ventilation duct, shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

(3) Scuppers shall not be led to machinery or other spaces where sources of ignition may be present.

84. Special Requirements for Ships Carrying Dangerous Goods—(1) The requirements of clause 95 of this Code shall apply, as appropriate, to passenger ships carrying dangerous goods.

SECTION C—CARGO SHIPS

85. Structure—(1) Subject to the provisions of sub-clause (4) of this clause, the hull, superstructure, structural bulkheads, decks and deckhouses shall be constructed of steel or other equivalent material.

(2) The insulation of aluminium alloy components of "A" or "B" class divisions, except structure which in the opinion of the Chief Surveyor is non-loadbearing, shall be such that the temperature of the structural core does not rise more than 200°C above the ambient temperature at any time during the applicable exposure to the standard fire test.

(3) Special attention shall be given to the insulation of aluminium alloy components of columns, stanchions and other structural members required to support lifeboat and liferaft stowage, launching and embarkation areas, and "A" and "B" class divisions, to ensure:

(a) that for such members supporting lifeboat and liferaft areas and "A" class divisions, the temperature rise limitation specified in sub-clause (2) of this clause shall apply at the end of one hour; and

(b) that for such members required to support "B" class divisions, the temperature rise limitation specified in sub-clause (2) of this clause shall apply at the end of half an hour.

(4) Crowns and casings of machinery spaces of category A shall be of steel construction adequately insulated and openings therein, if any, shall be suitably arranged and protected to prevent the spread of fire.

(5) One of the following methods of protection shall be adopted in accommodation and service areas:

(a) Method IC—The construction of all internal divisional bulkheading of non-combustible "B" or "C" class divisions generally without the installation of an automatic sprinkler, fire detection and fire alarm system in the accommodation and service spaces, except as required by the Shipping (Fire Appliances) Regulations 1989; or

(b) Method IIC—The fitting of an automatic sprinkler, fire detection and fire alarm system as required by the Shipping (Fire Appliances) Regulations 1989 for the detection and extinction of fire in all spaces in which fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheading; or

(c) Method IIIC—The fitting of a fixed fire detection and fire alarm system, as required by the Shipping (Fire Appliances) Regulations 1989, in all spaces in which a fire might be expected to originate, generally with no restriction on the type of internal divisional bulkheading, except that in no case must the area of any accommodation space or spaces bounded by an "A" or "B" class division exceed 50m². Consideration may be given by the Chief Surveyor to increasing this area for public spaces.

(6) The requirements for the use of non-combustible materials

in construction and insulation of the boundary bulkheads of machinery spaces, control stations, service spaces, etc. and the protection of stairway enclosures and corridors will be common to all three methods outlined in sub-clause (5) of this clause.

86. Bulkheads Within the Accommodation and Service Spaces—(1) All bulkheads required to be “B” class divisions shall extend from deck to deck and to the shell or other boundaries, unless continuous “B” class ceilings or linings are fitted on both sides of the bulkhead in which case the bulkhead may terminate at the continuous ceiling or lining.

(2) Method IC—All bulkheads not required by this or other clauses of this section to be “A” or “B” class divisions, shall be of at least “C” class construction.

(3) Method IIC—There shall be no restriction on the construction of bulkheads not required by this or other clauses of this section to be “A” or “B” class divisions except in individual cases where “C” class bulkheads are required in accordance with table 87.1 of this Code.

(4) Method IIIC—There shall be no restriction on the construction of bulkheads not required by this section to be “A” or “B” class divisions except that the area of any accommodation space or spaces bounded by a continuous “A” or “B” class division must in no case exceed 50m² except in individual cases where “C” class bulkheads are required in accordance with table 87.1 of this Code. Consideration may be given by the Chief Surveyor to increasing this area for public space.

87. Fire Integrity of Bulkheads and Decks—(1) In addition to complying with the specific provisions for fire integrity of bulkheads and decks mentioned elsewhere in this section, the minimum fire integrity of bulkheads and decks shall be as prescribed in tables 87.1 and 87.2 of this Code,

(2) The following requirements shall govern application of the tables:

(a) Tables 87.1 and 87.2 shall apply respectively to the bulkheads and decks separating adjacent spaces.

(b) For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (11) below. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) Control Stations

Spaces containing emergency sources of power and lighting.

Wheelhouse and chartroom.

Spaces containing the ship’s radio equipment.

Fire-extinguishing rooms, fire control rooms and fire-recording stations.

Control room for propulsion machinery when located outside the machinery space.

Spaces containing centralised fire alarm equipment.

(2) Corridors

Corridors and lobbies

(3) Accommodation spaces

Spaces as defined in clause 1 of this Code, excluding corridors.

(4) Stairways

Interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto.

In this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service spaces (low risk)

Lockers and store-rooms having an area of less than 2m², drying rooms and laundries.

(6) Machinery spaces of category A

Spaces as defined in clause 1 of this Code.

(7) Other machinery spaces

Spaces as defined in clause 1 of this Code, excluding machinery spaces of category A.

(8) Cargo spaces

All spaces used for cargo (including cargo oil tanks) and trunkways and hatchways to such spaces.

(9) Service spaces (high risk)

Galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and store-rooms having an area of 2m² or more, workshops other than those forming part of the machinery spaces.

(10) Open decks

Open deck spaces and enclosed promenades having no fire risk. Air spaces (the space outside superstructures and deckhouses).

(11) Ro-ro cargo spaces

Spaces as defined in clause 1 of this Code. Cargo spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion.

(3) Continuous “B” class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

(4) External boundaries which are required in clause 85(1) of this Code to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles provided that there is no requirement for such boundaries to have “A” class integrity elsewhere in this part. Similarly, in such boundaries which are not required to have “A” class integrity, doors may be of materials to the satisfaction of the Chief Surveyor.

TABLE 87.1—FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations (1)	A-0 ^c	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*	A-60
Corridors (2)		C	B-0	B-0 A-0 _c	B-0	A-60	A-0	A-0	A-0	*	A-30
Accommodation spaces (3)			C ^{a,b}	B-0 A-0 _c	B-0	A-60	A-0	A-0	A-0	*	A-30
Stairways (4)				B-0 A-0 _c	B-0 A-0 _c	A-60	A-0	A-0	A-0	*	A-30
Service spaces (low risk) (5)					C	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A (6)						*	A-0	A-0 ^g	A-60	*	A-60 ^f
Other machinery spaces (7)							A-0 ^d	A-0	A-0	*	A-0
Cargo spaces (8)								*	A-0	*	A-0
Service spaces (high risk) (9)									A-0 ^d	*	A-30
Open decks (10)										—	A-0
Ro-ro cargo spaces (11)											* ^h

TABLE 87.2—FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES

Space below ↓ Space above →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Control stations (1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0	*	A-60
Corridors (2)	A-0	*	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30
Accommodation spaces (3)	A-60	A-0	*	A-0	*	A-60	A-0	A-0	A-0	*	A-30
Stairways (4)	A-0	A-0	A-0	*	A-0	A-60	A-0	A-0	A-0	*	A-30
Service spaces (low risk) (5)	A-15	A-0	A-0	A-0	*	A-60	A-0	A-0	A-0	*	A-0
Machinery spaces of category A (6)	A-60	A-60	A-60	A-60	A-60	*	A-60 ⁱ	A-30	A-60	*	A-60
Other machinery spaces (7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*	A-0
Cargo spaces (8)	A-60	A-0	A-0	A-0	A-0	A-0	A-0	*	A-0	*	A-0
Service spaces (high risk) (9)	A-60	A-0	A-0	A-0	A-0	A-60	A-0	A-0	A-0 ^d	*	A-30
Open decks (10)	*	*	*	*	*	*	*	*	*	—	*
Ro-ro cargo spaces (11)	A-60	A-30	A-30	A-30	A-0	A-60	A-0	A-0	A-30	*	* ^h

Notes: To be applied to tables 87.1 and 87.2 as appropriate.

a No special requirements are imposed upon bulkheads in methods IIC and IIIC fire protection.

b In case of method IIIC "B" class bulkheads of "B-0" rating shall be provided between spaces or groups of spaces of 50m² and over in area.

c For clarification as to which applies, see clauses 86 and 88 of this Code.

d Where spaces are of the same numerical category and superscript ^d appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an A-0" bulkhead.

e Bulkheads separating the wheelhouse, chartroom and radio room from each other may be "B-0" rating.

f A-0 rating may be used if no dangerous goods are intended

to be carried, or if such goods are stowed not less than 3m horizontally from such bulkhead.

g For cargo spaces in which dangerous goods are intended to be carried, clause 95(3)(e) of this Code applies.

h Bulkheads and decks separating ro-ro cargo spaces shall be capable of being closed reasonably gastight and such divisions shall have "A" class integrity in so far as is reasonable and practicable in the opinion of the Chief Surveyor.

i Fire insulation need not be fitted if the machinery space in category (7), in the opinion of the Chief Surveyor, has little or no fire risk.

* Where an asterisk appears in the tables, the division is required to be of steel or other equivalent material but is not required to be of "A" class standard.

88. Protection of Stairways and Lift Trunks in Accommodation Spaces, Service Spaces and Control Stations—(1) Stairways which penetrate only a single deck

shall be protected at least at one level by at least "B-0" class divisions and self-closing doors. Lifts which penetrate only a single deck shall be surrounded by "A-0" class divisions with steel doors at both levels. Stairways and lift trunks which penetrate more than a single deck shall be surrounded by at least "A-0" class divisions and be protected by self-closing doors at all levels.

(2) On ships having accommodation for 12 persons or less, where stairways penetrate more than a single deck and where there are at least two escape routes direct to the open deck at every accommodation level, consideration may be given by the Chief Surveyor to reducing the "A-0" requirements of sub-clause (1) of this clause to "B-0".

(3) All stairways shall be of steel frame construction except where the Chief Surveyor sanctions the use of other equivalent material.

89. Doors in Fire Resisting Divisions—(1) The fire resistance of doors shall, as far as practicable, be equivalent to that of the division in which they are fitted. Doors and door frames in "A" class divisions shall be constructed of steel. Doors in "B" class divisions shall be non-combustible. Doors fitted in boundary bulkheads of machinery spaces of category A shall be reasonably gastight and self-closing. In ships constructed according to method IC, the use of combustible materials in doors separating cabins from the individual interior sanitary accommodation such as showers, may be permitted.

(2) Doors required to be self-closing shall not be fitted with hold-back hooks. However, hold-back arrangements fitted with remote release devices of the fail-safe type may be utilised.

(3) In corridor bulkheads ventilation openings may be permitted only in and under the doors of cabins and public spaces. The openings shall be provided only in the lower half of a door. Where such opening is in or under a door the total net area of any such opening or openings shall not exceed 0.05m². When such opening is cut in a door it shall be fitted with a grille made of non-combustible material.

(4) Watertight doors need not be insulated.

90. Ventilation Systems—The ventilation systems of cargo ships shall be in compliance with the provisions of clause 79, which includes provisions of clause 78 sub-clauses (4) to (11). Except that the provision of clause 78(10) shall not be a requirement for cargo ships.

91. Restricted Use of Combustible Materials—(1) All exposed surfaces in corridors and stairway enclosures and surfaces including grounds in concealed or inaccessible spaces in accommodation and service spaces and control stations shall have low flame-spread characteristics. Exposed surfaces of ceilings in accommodation and service spaces and control stations shall have low flame-spread characteristics.

(2) Paints, varnishes and other finishes used on exposed interior surfaces shall not offer an undue fire hazard in the judgement of the Chief Surveyor and shall not be capable of producing excessive quantities of smoke.

(3) Primary deck coverings, if applied within accommodation and service spaces and control stations, shall be of approved material which will not readily ignite, or give rise to toxic or explosive hazards at elevated temperatures.

92. Details of Construction—(1) Method IC—In accommodation and service spaces and control stations all linings, draught stops, ceilings and their associated grounds shall be of non-combustible materials.

(2) Methods IIC and IIIC—In corridors and stairway enclosures serving accommodation and service spaces and control stations, ceilings, linings, draught stops and their associated grounds shall be of non-combustible materials.

(3) Methods IC, IIC and IIIC—Except in cargo spaces or refrigerated compartments of service spaces, insulating materials shall be non-combustible. Vapour barriers and

adhesives used in conjunction with insulation, as well as the insulation of pipe fittings, for cold service systems, need not be of non-combustible materials, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have qualities of resistance to the propagation of flame to the satisfaction of the Chief Surveyor.

(4) Where non-combustible bulkheads, linings and ceilings are fitted in accommodation and service spaces they may have a combustible veneer not exceeding 2.0mm in thickness within any such space except corridors, stairway enclosures and control stations, where the veneer shall not exceed 1.5mm in thickness.

(5) Air spaces enclosed behind ceilings, panellings, or linings, shall be divided by close-fitting draught stops spaced not more than 14m apart. In the vertical direction, such air spaces, including those behind linings of stairways, trunks and similar structures, shall be closed at each deck.

93. Ro-ro Cargo Spaces—(1) Where a ro-ro cargo space is fitted with a fixed pressure water-spraying system in accordance with the Shipping (Fire Appliances) Regulations 1989 the drainage and pumping arrangements shall be such as to prevent the build up of free surfaces. If this is not possible the adverse effect upon stability of the added weight and free surface of water shall be taken into account to the extent deemed necessary by the Chief Surveyor in his approval of the stability information. Such information shall be included in the stability information supplied to the master.

(2) Closed ro-ro cargo spaces shall be provided with an effective power ventilation system sufficient to provide at least six air changes per hour based on an empty hold. The system shall be entirely separate from other ventilating systems. Ventilation ducts serving ro-ro cargo spaces capable of being effectively sealed shall be separated for each cargo space. The Chief Surveyor may require an increased number of air changes when vehicles are being loaded or unloaded. The system shall be capable of being controlled from a position outside such spaces.

The ventilation shall be so arranged as to prevent air stratification and the formation of air pockets.

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

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

Ventilation ducts, including dampers, shall be made of steel and their arrangement shall be to the satisfaction of the Chief Surveyor.

(3) Closed ro-ro cargo spaces carrying motor vehicles with fuel in their tanks for their own propulsion shall comply with the following additional provisions:

(a) Except as provided in paragraph (b) below, electrical equipment and wiring shall be of a type suitable for use in explosive petrol and air mixtures.

(b) Above a height of 450mm from the deck and from each platform for vehicles, if fitted, except platforms with openings of sufficient size permitting penetration of petrol gases downwards, electrical equipment of a type so enclosed and protected as to prevent the escape of sparks shall be permitted as an alternative on condition that the ventilation system is so designed and operated as to provide continuous ventilation of the cargo spaces at the rate of at least ten air changes per hour whenever vehicles are on board.

(c) Other equipment which may constitute a source of ignition of flammable vapours shall not be permitted.

(d) Electrical equipment and wiring in an exhaust ventilation duct shall be of a type approved for use in explosive petrol and air mixtures and the outlet from any exhaust duct shall be sited in a safe position, having regard to other possible sources of ignition.

(e) Scuppers shall not be led to machinery or other spaces where sources of ignition may be present.

94. Cargo Spaces, other than Ro-ro Cargo Spaces, Intended for the Carriage of Motor Vehicles with Fuel in their Tanks for their Own Propulsion—(1) Spaces intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion shall comply with the requirements of clause 93 of this Code.

95. Special Requirements for Ships Carrying Dangerous Goods—(1) In addition to complying with the requirements of clause 93 of this Code for cargo ships and with the requirements of clause 83 of this Code for passenger ships as appropriate, ship types and cargo spaces, referred to in sub-clause (2) of this clause intended for the carriage of dangerous goods shall comply with the requirements of this clause, as appropriate, except when carrying dangerous goods in limited quantities unless such requirements have already been met by compliance with the requirements elsewhere in this part. The types of ships and modes of carriage of dangerous goods are referred to in sub-clause (2) of this clause and in table 95.1 where the letters appearing in sub-clause (2) of this clause are referred to in the top line.

(2) The following ship types and cargo spaces shall govern the application of tables 95.1 and 95.2 of this Code.

(a) Ships and cargo spaces not specifically designed for the carriage of freight containers but intended for the carriage of dangerous goods in packaged form including goods in freight containers and portable tanks.

(b) Purpose built container ships and cargo spaces intended for the carriage of dangerous goods in freight containers and portable tanks.

(c) Ro-ro ships and ro-ro cargo spaces intended for the carriage of dangerous goods.

(d) Ships and cargo spaces intended for the carriage of solid dangerous goods in bulk.

(e) Ships and cargo spaces intended for carriage of dangerous goods other than liquids and gases in bulk in shipborne barges.

(3) Unless otherwise specified the following requirements shall govern the application of tables 95.1, 95.2 and 95.3 to both "on-deck" and "under-deck" stowage of dangerous goods where the letters of the following paragraphs are indicated in the first column.

(a) Electrical equipment and wiring shall not be fitted in enclosed cargo spaces, closed vehicle deck spaces, or open vehicle deck spaces unless it is essential for operational purposes in the opinion of the Chief Surveyor. However, if electrical equipment is fitted in such spaces, it shall be of a certified safe type for use in the dangerous environments to which it may be exposed unless it is possible to completely isolate the electrical system (by removal of links in the system, other than fuses). Cable penetrations of the decks and bulkheads shall be sealed against the passage of gas or vapour. Through runs of cables and cables within the cargo spaces shall be protected against damage from impact. Any other equipment which may constitute a source of ignition of flammable vapour shall not be permitted.

(b) Adequate power ventilation shall be provided in enclosed cargo spaces. The arrangement shall be such as to provide for at least six air changes per hour in the cargo space based on an empty cargo space and for removal of vapours from the upper or lower parts of the cargo space, as appropriate.

(c) The fans shall be such as to avoid the possibility of ignition of flammable gas air mixtures. Suitable wire mesh guards shall be fitted over inlet and outlet ventilation openings.

(d) Where it is intended to carry flammable or toxic liquids in enclosed cargo spaces the bilge pumping system shall be designed to ensure against inadvertent pumping of such liquids through machinery space piping or pumps. Where large

quantities of such liquids are carried, consideration shall be given to the provision of additional means of draining those cargo spaces. These means shall be to the satisfaction of the Chief Surveyor.

(e) Bulkheads forming boundaries between cargo spaces and machinery spaces of category A shall be insulated to "A-60" standard, unless the dangerous goods are stowed at least 3m horizontally away from such bulkheads. Other boundaries between such spaces shall be insulated to "A-60" standard.

(4) Where water is used for cooling designated under-deck cargo spaces or a water spray system in a ro-ro cargo space in accordance with the Shipping (Fire Appliances) Regulations 1989 drainage and pumping arrangements shall be provided such as to prevent the build up of free surfaces. If this is not possible the adverse effect upon stability of the added weight and free surface of water shall be taken into account to the extent deemed necessary by the Chief Surveyor in his approval of the stability information.

(5) Each ship complying with the requirements of this clause and the appropriate requirements of the Shipping (Fire Appliance) Regulations 1989 shall be provided with an appropriate document as evidence of such compliance.

Table 95.1 Application of the Requirements to Different Modes of Carriage of Dangerous Goods in Ships and Cargo Spaces

Wherever 'X' appears in Table 95.1, it means that this requirement is applicable to all classes of dangerous goods as given in the appropriate line of Table 95.3 except as indicated by the notes.

Clause 95(3)	Clause 95(2)					(d)	(e)
	(a)	(b)	(c)				
			Closed ro-ro cargo spaces	Open ro-ro cargo spaces	weather decks		
(a)	X	X	X	X	-	-	X ^c
(b)	X	X ^a	X	-	-	See Table 95.2	X ^c
(c)	X	X ^a	X	-	-	95.2	X ^c
(d)	X	X	X	-	-	-	-
(e)	X	X ^b	X	X	X	-	-

Notes:

^a For classes 4 and 5.1 not applicable to closed freight containers.

For classes 2, 3, 6.1 and 8 when carried in closed freight containers the ventilation rate may be reduced to not less than two air changes. For the purpose of this requirement a portable tank is a closed freight container.

^b Applicable to decks only.

^c In the special case where the barges are capable of containing flammable vapours or alternatively if they are capable of discharging flammable vapours to a safe space outside the barge carrier compartment by means of ventilation ducts connected to the barges, these requirements may be reduced or waived to the satisfaction of the Chief Surveyor.

Table 95.2—Application of the Requirements to Different Classes of Dangerous Goods for Ships and Cargo Spaces Carrying Solid Dangerous Goods in Bulk

Clause 95(3)	Class of Dangerous Goods						
	4.1	4.2	4.3 ^d	5.1	6.1	8	9
(a)	X	X ^c	X	X ^c	-	-	X ^c
(b) ^d	X ^c	X ^c	X	X ^c	-	-	X ^c
(c) ^d	X	X ^c	X	X ^c	-	-	X ^c
(e)	X	X	X	X ^c	-	X ^c	X

Notes: The classification of dangerous goods is according to Regulation 2 of Chapter VII of the Solas Convention 1974, and subsequent amendments.

^d The hazards of substances in this class which may be carried in bulk are such that special consideration must be given by the Chief Surveyor to the construction of the ships involved

in addition to meeting the requirements enumerated in this table.

- Reference is made to the IMO International Maritime Dangerous Goods Code (resolution A.81(IV) as amended), or the IMO Code of Safe Practice for Solid Bulk Cargoes (resolution A.434(XI) as amended), as appropriate.
- † At least natural ventilation is required in enclosed cargo spaces intended for carriage of solid dangerous goods in bulk. In cases where power ventilation is required in the Code of Safe Practice for Solid Bulk Cargoes (resolution A.434(XI) as amended), the use of portable ventilation units (equipment) to the satisfaction of the Chief Surveyor may suffice.

Table 95.3 Application of the Requirements to Different Classes of Dangerous Goods Except Solid Dangerous Goods in Bulk

Clause 95(3)	Class of Dangerous Goods							
	1	2	3	4	5.1	5.2	6.1	8
(a)	X ^b	X ^c	X ^d	-	-	-	X ^m	X ^m
(b)	-	X ^e	X ^d	X ^m	X ^m	-	X ^m	X ^m
(c)	-	X ^d	X ^d	-	-	-	X ^m	X ^m
(d)	-	-	X ^d	-	-	-	X ^h	X ⁱ
(e)	X ^u	X	X	X	X ⁿ	-	X ^m	X ^m

Notes:

- ^a Applicable to flammable or poisonous gases.
- ^b Except goods of class 1 in division 1.4, compatibility group S.
- ^c All flammable gases.
- ^d All liquids having a flashpoint below 23°C (closed cup test).
- ^e Liquids only.
- ^f Goods of class 1 shall be stowed 3m horizontally away from the machinery space boundaries in all cases.
- ^m Reference is made to the IMO International Maritime Dangerous Goods Code (resolution A.81(IV) as amended) or the IMO Code of Safe Practice for Solid Bulk Cargoes (resolution A.434(XI) as amended), as appropriate.

Section D—Tankers

The requirements of this section are additional to those of section C except for clauses 93, 94 and 95 of this Code and except as provided otherwise in clauses 98 and 99 of this Code.

96. Application—(1) Unless expressly provided otherwise, this part shall apply to tankers carrying crude oil and petroleum products having a flashpoint not exceeding 60°C (closed cup test), as determined by an approved flashpoint apparatus, and a Reid vapour pressure which is below atmospheric pressure and other liquid products having a similar fire hazard.

(2) Where liquid cargoes other than those referred to in sub-clause (1) of this clause or liquefied gases which introduce additional fire hazards are intended to be carried, additional safety measures shall be required to the satisfaction of the Chief Surveyor, having due regard to the provisions of the IMO International Bulk Chemical Code, the IMO Bulk Chemical Code, the IMO International Gas Carrier Code and the IMO Gas Carrier Code, as appropriate.

(3) This subclause applies to all ships which are combination carriers. Such ships shall not carry solid cargoes unless all cargo tanks are empty of oil and gas-freed or unless the arrangements provided in each case are to the satisfaction of the Chief Surveyor and in accordance with the relevant operational requirements contained in the IMO Guidelines for Inert Gas Systems.

(4) Chemical tankers and gas carriers shall comply with the requirements of this part, except where alternative and supplementary arrangements are provided to the satisfaction of the Chief Surveyor, having due regard to the provisions of the IMO International Bulk Chemical Code, the IMO Bulk Chemical Code, the IMO International Gas Carrier Code and the IMO Gas Carrier Code, as appropriate.

97. Location and Separation of Spaces—(1) Machinery

spaces shall be positioned aft of cargo tanks and slop tanks; they shall also be situated aft of cargo pump-rooms and cofferdams, but not necessarily aft of the oil fuel bunker tanks. Any machinery space shall be isolated from cargo tanks and slop tanks by cofferdams, cargo pump-rooms, oil fuel bunker tanks or permanent ballast tanks. Pump-rooms containing pumps and their accessories for ballasting those spaces situated adjacent to cargo tanks and slop tanks and pumps for oil fuel transfer shall be considered as equivalent to a cargo pump room within the context of this clause, provided that such pump-rooms have the same safety standard as that required for cargo pump-rooms. However, the lower portion of the pump-room may be recessed into machinery spaces of category A to accommodate pumps, provided that the deck head of the recess is in general not more than one third of the moulded depth above the keel, except that in the case of ships of not more than 25,000 tonnes deadweight, where it can be demonstrated that for reasons of access and satisfactory piping arrangements this is impracticable, the Chief Surveyor may permit a recess in excess of such height, but not exceeding one half of the moulded depth above the keel.

(2) Accommodation spaces, main cargo control stations, control stations and service spaces (excluding isolated cargo handling gear lockers) shall be positioned aft of all cargo tanks, slop tanks, cargo pump-rooms and cofferdams which isolate cargo or slop tanks from machinery spaces but not necessarily aft of the oil fuel bunker tanks. A recess provided in accordance with sub-clause (1) of this clause need not be taken into account when the position of these spaces is being determined.

(3) However, where deemed necessary, accommodation spaces, control stations, machinery spaces other than those of category A, and service spaces may be permitted forward of the cargo area, provided they are isolated from the cargo tanks and slop tanks by cofferdams, cargo pump-rooms, oil fuel bunker tanks or permanent ballast tanks and subject to an equivalent standard of safety and appropriate availability of fire-extinguishing arrangements being provided to the satisfaction of the Chief Surveyor. In addition, where deemed necessary for the safety or navigation of the ship, the Chief Surveyor may permit machinery spaces containing internal combustion machinery not being main propulsion machinery having an output greater than 375kW to be located forward of the cargo area provided the arrangements are in accordance with the provisions of this sub-clause.

(4) In combination carriers only:

(a) The slop tanks are to be surrounded by cofferdams except where the boundaries of the slop tanks where slop may be carried on dry cargo voyages are the hull, main cargo deck, cargo pump-room bulkhead or oil fuel bunker tank. These cofferdams shall not be open to a double bottom, pipe tunnel, pump-room or other enclosed space. Means shall be provided for filling the cofferdams with water and for draining them. Where the boundary of a slop tank is the cargo pump-room bulkhead the pump-room shall not be open to the double bottom, pipe tunnel or other enclosed space; however, openings provided with gastight bolted covers may be permitted.

(b) Means shall be provided for isolating the piping connecting the pump-room with the slop tanks referred to in subclause (4)(a) of this clause. The means of isolation shall consist of a valve followed by a spectacle flange or a spool piece with appropriate blank flanges. This arrangement shall be located adjacent to the slop tanks, but where this is unreasonable or impracticable, it may be located within the pump-room directly after the piping penetrates the bulkhead. A separate pumping and piping arrangement shall be provided for discharging the contents of the slop tanks directly over the open deck when the ship is in the dry cargo mode.

(c) Hatches and tank cleaning openings to slop tanks shall only be permitted on the open deck and shall be fitted with

closing arrangements. Except where they consist of bolted plates with bolts at watertight spacing, these closing arrangements shall be provided with locking arrangements.

(d) Where cargo wing tanks are provided, cargo lines below deck shall be installed inside these tanks. However, the Chief Surveyor may permit cargo oil lines to be placed in special ducts which shall be capable of being adequately cleaned and ventilated and be to the satisfaction of the Chief Surveyor. Where cargo wing tanks are not provided cargo oil lines below deck shall be placed in special ducts.

(5) Where the fitting of a navigation position above the cargo areas is shown to be necessary, it shall be for navigation purposes only and it shall be separated from the cargo tank deck by means of an open space with a height of at least 2m. The fire protection of such a navigation position shall in addition be as required for control spaces in clauses 99(1) and 99(2) of this Code and other provisions, as applicable, of this Part.

(6) Means shall be provided to keep deck spills away from the accommodation and service areas. This may be accomplished by provision of a permanent continuous coaming of a suitable height extending from side to side. Special consideration shall be given to the arrangements associated with stern loading.

(7) Exterior boundaries of superstructures and deckhouses enclosing accommodation and including any overhanging decks which support such accommodation, shall be insulated to "A-60" standard for the whole of the portions which face the cargo area and for 3m aft of the front boundary. In the case of the sides of those superstructures and deckhouses, such insulation shall be carried as high as is deemed necessary by the Chief Surveyor.

(8) Entrances, air inlets and openings to accommodation spaces, service spaces and control stations shall not face the cargo area. They shall be located on the transverse bulkhead not facing the cargo area or on the outboard side of the superstructure or deckhouse at a distance of at least 4 per cent of the length of the ship but not less than 3m from the end of the superstructure or deckhouse facing the cargo area. This distance, however, need not exceed 5m.

(9) No doors shall be fitted within the limits specified in sub-clause (8) of this clause except that doors to spaces not having access to accommodation spaces, service spaces and control stations may be permitted by the Chief Surveyor. Such spaces may be cargo control stations, provision rooms and store-rooms. Where such doors are fitted to spaces located aft of the cargo area, the boundaries of the space shall be insulated to "A-60" standard, with the exception of the boundary facing the cargo area. Bolted plates for removal of machinery may be fitted within the limits specified in sub-clause (8) of this clause. Wheelhouse doors and wheelhouse windows may be located within the limits specified in sub-clause (8) of this clause so long as they are designed to ensure that the wheelhouse can be made rapidly and efficiently gas and vapour tight.

(10) Windows and sidescuttles facing the cargo area and on the sides of the superstructures and deckhouses within the limits specified in sub-clause (8) of this clause shall be of the fixed (non-opening) type. Such windows and sidescuttles in the first tier on the main deck shall be fitted with inside covers of steel or other equivalent material.

98. Structure, Bulkheads within Accommodation and Service Spaces and Details of Construction—(1) For the application of the requirements of clauses 85, 86 and 92 of this Code to tankers, only method IC as defined in clause 85(5)(a) of this Code shall be used.

(2) Skylights to cargo pump-rooms shall be of steel, shall not contain any glass and shall be capable of being closed from outside the pump-room.

99. Fire Integrity of Bulkheads and Decks—(1) In lieu of clause 87 of this Code and in addition to complying with the specific provisions for fire integrity of bulkheads and decks

mentioned elsewhere in this part the minimum fire integrity of bulkheads and decks shall be as prescribed in tables 99.1 and 99.2 in this Code.

(2) The following requirements shall govern application of the tables:

(a) Tables 99.1 and 99.2 of this Code shall apply respectively to the bulkhead and decks separating adjacent spaces.

(b) For determining the appropriate fire integrity standards to be applied to divisions between adjacent spaces, such spaces are classified according to their fire risk as shown in categories (1) to (10) below. The title of each category is intended to be typical rather than restrictive. The number in parentheses preceding each category refers to the applicable column or row in the tables.

(1) Control Stations

Spaces containing emergency sources of power and lighting.

Wheelhouse and chartroom.

Spaces containing the ship's radio equipment.

Fire-extinguishing rooms, fire control rooms and fire-recording stations.

Control room for propulsion machinery when located outside the machinery space.

Spaces containing centralised fire alarm equipment.

(2) Corridors

Corridors and lobbies

(3) Accommodation spaces

Spaces as defined in clause 1 of this Code, excluding corridors.

(4) Stairways

Interior stairways, lifts and escalators (other than those wholly contained within the machinery spaces) and enclosures thereto.

In this connection, a stairway which is enclosed only at one level shall be regarded as part of the space from which it is not separated by a fire door.

(5) Service spaces (low risk)

Lockers and store-rooms having an area of less than 2m², drying rooms and laundries.

(6) Machinery spaces of category A

Spaces as defined in clause 1 of this Code.

(7) Other machinery spaces

Spaces as defined in clause 1 of this Code, excluding machinery spaces of category A.

(8) Cargo pump-rooms

Spaces containing cargo pumps and entrances and trunks to such spaces.

(9) Service spaces (high risk)

Galleys, pantries containing cooking appliances, paint and lamp rooms, lockers and store-rooms having an area of 2m² or more, workshops other than those forming part of the machinery spaces.

(10) Open decks

Open deck spaces and enclosed promenades having no fire risk. Air spaces (the space outside superstructures and deckhouses).

(3) Continuous "B" class ceilings or linings, in association with the relevant decks or bulkheads, may be accepted as contributing, wholly or in part, to the required insulation and integrity of a division.

(4) External boundaries which are required in clause 98(1) of this Code to be of steel or other equivalent material may be pierced for the fitting of windows and sidescuttles provided

that there is no requirement for such boundaries to have "A" class integrity elsewhere in this part. Similarly, in such boundaries which are not required to have "A" class integrity, doors may be of materials to the satisfaction of the Chief Surveyor.

(5) Permanent approved gastight lighting enclosures for illuminating cargo pump-rooms may be permitted in bulkheads and decks separating cargo pump-rooms and other spaces provided they are of adequate strength and the integrity and gastightness of the bulkhead or deck is maintained.

TABLE 99.1—FIRE INTEGRITY OF BULKHEADS SEPARATING ADJACENT SPACES

Spaces	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control stations (1)	A-0 ^c	A-0	A-60	A-0	A-15	A-60	A-15	A-60	A-60	*
Corridors (2)		C	B-0	B-0 A-0 _a	B-0	A-60	A-0	A-60	A-0	*
Accommodation spaces (3)			C	B-0 A-0 _a	B-0	A-60	A-0	A-60	A-0	*
Stairways (4)				B-0 A-0 _a	B-0 A-0 _a	A-60	A-0	A-60	A-0	*
Service spaces (low risk) (5)					C	A-60	A-0	A-60	A-0	*
Machinery spaces of category A (6)						*	A-0	A-0 ^d	A-60	*
Other machinery spaces (7)							A-0 ^b	A-0	A-0	*
Cargo pump-rooms (8)								*	A-60	*
Service spaces (high risk) (9)									A-0 ^b	*
Open decks (10)										—

TABLE 99.2—FIRE INTEGRITY OF DECKS SEPARATING ADJACENT SPACES

Space below ↓	Space above →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control stations (1)	(1)	A-0	A-0	A-0	A-0	A-0	A-60	A-0	—	A-0	*
Corridors (2)	(2)	A-0	*	*	A-0	*	A-60	A-0	—	A-0	*
Accommodation spaces (3)	(3)	A-60	A-0	*	A-0	*	A-60	A-0	—	A-0	*
Stairways (4)	(4)	A-0	A-0	A-0	*	A-0	A-60	A-0	—	A-0	*
Service spaces (low risk) (5)	(5)	A-15	A-0	A-0	A-0	*	A-60	A-0	—	A-0	*
Machinery spaces of category A (6)	(6)	A-60	A-60	A-60	A-60	A-60	*	A-60 ^e	A-0	A-60	*
Other machinery spaces (7)	(7)	A-15	A-0	A-0	A-0	A-0	A-0	*	A-0	A-0	*
Cargo pump-rooms (8)	(8)	—	—	—	—	—	A-0 ^d	A-0	*	—	*
Service spaces (high risk) (9)	(9)	A-60	A-0	A-0	A-0	A-0	A-60	A-0	—	A-0 ^b	*
Open decks (10)	(10)	*	*	*	*	*	*	*	*	*	—

Notes: To be applied to tables 99.1 and 99.2 of this Code as appropriate.

^a For clarification as to which applies, see clauses 86 and 88 of this Code.

^b Where spaces are of the same numerical category and superscript b appears, a bulkhead or deck of the rating shown in the tables is only required when the adjacent spaces are for a different purpose, e.g. in category (9). A galley next to a galley does not require a bulkhead but a galley next to a paint room requires an "A-0" bulkhead.

^c Bulkheads separating the wheelhouse, chartroom and radio room from each other may be "B-0" rating.

^d Bulkheads and decks between cargo pump-rooms and machinery spaces of category A may be penetrated by cargo pump shaft glands and similar glanded penetrations, provided that gastight seals with efficient lubrication or other means of ensuring the permanence of the gas seal are fitted in way of the bulkhead or deck.

^e Fire insulation need not be fitted if the machinery space in category (7), in the opinion of the Chief Surveyor, has little or no fire risk.

^{*} Where an asterisk appears in the tables, the division is required to be of steel or other equivalent material but is not required to be of "A" class standard.

100. Cargo Tank Venting—(1) The venting systems of cargo tanks are to be entirely distinct from the air pipes of the other compartments of the ship. The arrangements and position of openings in the cargo tank deck from which emission of flammable vapours can occur shall be such as to minimise the possibility of flammable vapours being admitted to enclosed spaces containing a source of ignition, or collecting in the vicinity of deck machinery and equipment which may constitute an ignition hazard.

(2) The venting arrangements shall be so designed and operated as to ensure that neither pressure nor vacuum in

cargo tanks shall exceed design parameters and be such as to provide for:

(a) the flow of the small volumes of vapour, air or inert gas mixtures caused by thermal variations in a cargo tank in all cases through pressure/vacuum valves; and

(b) the passage of large volumes of vapour, air or inert gas mixtures during cargo loading and ballasting, or during discharging.

(3) The venting arrangements in each cargo tank may be independent or combined with other cargo tanks and may be incorporated into the inert gas piping.

(4) Where the arrangements are combined with other cargo tanks either stop valves or other acceptable means shall be provided to isolate each cargo tank. Where stop valves are fitted, they shall be provided with locking arrangements which shall be under the control of the responsible ship's officer. Any isolation must continue to permit the flow caused by thermal variations in a cargo tank in accordance with sub-clause (2)(a) of this clause.

(5) The venting arrangements shall be connected to the top of each cargo tank and shall be self-draining to the cargo tanks under all normal conditions of trim and list of the ship. Where it may not be possible to provide self-draining lines permanent arrangements shall be provided to drain the vent lines to a cargo tank.

(6) The venting system shall be provided with devices to prevent the passage of flame into the cargo tanks. The design, testing and locating of these devices shall be to the satisfaction of the Chief Surveyor.

(7) Provision shall be made to guard against liquid rising in the venting system to a height which would exceed the design head of cargo tanks. This shall be accomplished by high-level alarms or overflow control systems or other equivalent means, together with gauging devices and cargo tank filling procedures.

(8) Openings for pressure release required by sub-clause (2)(a) of this clause shall:

(a) have as great a height as is practicable above the cargo tank deck to obtain maximum dispersal of flammable vapours but in no case less than 2m above the cargo tank deck;

(b) be arranged at the furthest distance practicable but not less than 5m from the nearest air intakes and openings to enclosed spaces containing a source of ignition and from deck machinery and equipment which may constitute an ignition hazard.

(9) Pressure/vacuum valves required by sub-clause (2)(a) of this clause may be provided with a by-pass arrangement when they are located in a vent main or masthead riser. Where such an arrangement is provided there shall be suitable indicators to show whether the by-pass is open or closed.

(10) Vent outlets for cargo loading, discharging and ballasting required by sub-clause (2)(b) of this clause shall:

(a) permit the free flow of vapour mixtures; or

(b) permit the throttling of the discharge of the vapour mixtures to achieve a velocity of not less than 30m/sec;

(c) be so arranged that the vapour mixture is discharged vertically upwards;

(d) where the method is by free flow of vapour mixtures, be such that the outlet shall not be less than 6m above the cargo tank deck or fore and aft gangway if situated within 4m of the gangway and located not less than 10m measured horizontally from the nearest air intakes and openings to enclosed spaces containing a source of ignition and from deck machinery and equipment which may constitute an ignition hazard;

(e) where the method is by high velocity discharge, be located at a height not less than 2m above the cargo tank deck and not less than 10m measured horizontally from the nearest air intakes and openings to enclosed spaces containing a

source of ignition and from deck machinery and equipment which may constitute an ignition hazard. These outlets shall be provided with high velocity devices of an approved type;

(f) be designed on the basis of the maximum designed loading rate multiplied by a factor of at least 1.25 to take account of gas evolution, in order to prevent the pressure in any cargo tank from exceeding the design pressure. The master shall be provided with information regarding the maximum permissible loading rate for each cargo tank and in the case of combined venting systems, for each group of cargo tanks.

(11) In combination carriers, the arrangement to isolate slop tanks containing oil or oil residues from other cargo tanks shall consist of blank flanges which will remain in position at all times when cargoes other than liquid cargoes referred to in clause 96(1) of this Code are carried.

101. Cargo Tank Purging and/or Gas Freeing—(1) Arrangements for purging and/or gas-freeing shall be such as to minimise the hazards due to the dispersal of flammable vapours in the atmosphere and to flammable mixtures in a cargo tank. Accordingly:

(a) When the ship is provided with an inert gas system the cargo tanks shall first be purged in accordance with the provisions of the Shipping (Fire Appliances) Regulations 1989 until the concentration of hydrocarbon vapours in the cargo tanks has been reduced to less than 2 per cent by volume. Thereafter, venting may be at the cargo tank deck level.

(b) When the ship is not provided with an inert gas system, the operation shall be such that the flammable vapour is initially discharged:

(i) through the vent outlets as specified in clause 100(10) of this Code; or

(ii) with a vertical exit velocity of at least 20m/sec through outlets at least 2m above the cargo tank deck level and which are protected by suitable devices to prevent the passage of flame.

When the flammable vapour concentration in the outlet has been reduced to 30 per cent of the lower flammable limit the discharge of the vapour mixture may be at the cargo tank deck level.

102. Ventilation—(1) Cargo pump-rooms shall be mechanically ventilated and discharges from the exhaust fans shall be led to a safe place on the open deck. The ventilation of these rooms shall have sufficient capacity to minimise the possibility of accumulation of flammable vapours. The number of changes of air shall be at least 20 per hour, based upon the gross volume of the space. The air ducts shall be arranged so that all of the space is effectively ventilated. The ventilation shall be of the suction type using fans of the non-sparking type.

(2) The arrangement of ventilation inlets and outlets and other deckhouse and superstructure boundary space openings shall be such as to complement the provisions of clause 100 of this Code. Such vents especially for machinery spaces shall be situated as far aft as practicable. Due consideration in this regard should be given when the ship is equipped to load or discharge at the stern. Sources of ignition such as electrical equipment shall be so arranged as to avoid an explosion hazard.

(3) In combination carriers all cargo spaces and any enclosed spaces adjacent to cargo spaces shall be capable of being mechanically ventilated. The mechanical ventilation may be provided by portable fans.

Section E—General

103. Special Arrangements in Machinery Spaces—(1) The provisions of this regulation shall apply to machinery spaces of category A and, where the Chief Surveyor considers it desirable, to other machinery spaces.

(2) The number of skylights, doors, ventilators, openings in funnels to permit exhaust ventilation and other openings to

machinery spaces shall be reduced to a minimum consistent with the needs of ventilation and the proper and safe working of the ship.

(3) Skylights shall be of steel and shall not contain glass panels. Suitable arrangements shall be made to permit the release of smoke in the event of fire, from the space to be protected.

(4) In passenger ships, doors other than power-operated watertight doors, shall be so arranged that positive closure is assured in case of fire in the space, by power-operated closing arrangements or by the provision of self-closing doors capable of closing against an inclination of 3.5° opposing closure and having a fail-safe hook-back facility, provided with a remotely operated release device.

(5) Windows shall not be fitted in machinery space boundaries. This does not preclude the use of glass in control rooms within the machinery spaces.

(6) Means of control shall be provided for:

(a) opening and closure of skylights, closure of openings in funnels which normally allow exhaust ventilation, and closure of ventilator dampers;

(b) permitting the release of smoke;

(c) closing power-operated doors or actuating release mechanism on doors other than power-operated watertight doors;

(d) stopping ventilating fans; and

(e) stopping forced and induced draught fans, oil fuel transfer pumps, oil fuel unit pumps and other similar fuel pumps.

(7) The controls required in sub-clause (6) of this clause and in clause 39(2)(e) of this Code shall be located outside the space concerned, where they will not be cut off in the event of fire in the space they serve. In passenger ships such controls shall be situated at one control position or grouped in as few positions as possible to the satisfaction of the Chief Surveyor. Such positions shall have a safe access from the open deck.

(8) When access to any machinery space of category A is provided at a low level from an adjacent shaft tunnel, there shall be provided in the shaft tunnel, near the watertight door, a light steel fire-screen door operable from each side.

(9) For periodically unattended machinery spaces in cargo ships, the Chief Surveyor shall give special consideration to maintaining fire integrity of the machinery spaces, and the required shutdown arrangements (e.g. ventilation, fuel pumps, etc.). In passenger ships these requirements shall be at least equivalent to those of machinery spaces normally attended.

104. Arrangements for Gaseous Fuel for Domestic Purposes—Where gaseous fuel is used for domestic purposes the arrangements for the storage, distribution and utilisation of the fuel shall be such that, having regard to the hazards of fire and explosion which the use of such fuel may entail, the safety of the ship and the persons on board is preserved.

105. Miscellaneous Items—(1) Where "A" class divisions are penetrated for the passage of electric cables, pipes, trunks, ducts, and similar fittings, or for girders, beams or other structural members, arrangements shall be made to ensure that the fire resistance is not impaired, subject to the provisions of clause 75(5) of this Code.

(2) Where "B" class divisions are penetrated for the passage of electric cables, pipes, trunks, ducts and similar fittings or for the fitting of ventilation terminals, lighting fixtures and similar devices, arrangements shall be made to ensure that the fire resistance is not impaired.

(3) Pipes penetrating "A" or "B" class divisions shall be of materials approved by the Chief Surveyor having regard to the temperature such divisions are required to withstand.

(4) Where the Chief Surveyor may permit the conveying of oil and combustible liquids through accommodation and service

spaces, the pipes conveying oil or combustible liquids shall be of a material approved by the Chief Surveyor having regard to the fire risk.

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

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

(7) Cellulose-nitrate based films shall not be used for cinematograph installations.

(8) All waste-receptacles shall be constructed of non-combustible materials with no openings in the sides or bottom.

(9) In spaces where penetration of oil products is possible, the surface of insulation shall be impervious to oil or oil vapours.

106. Acceptance of Substitutes—(1) Where in this part of this Code any material or fitting is specified in any ship, any other type of material or fitting may be allowed, provided the Director is satisfied that it is not less effective.

Part VIII

Miscellaneous Provisions

107. Ballasting—When ballasting with water is necessary, the water ballast should not in general be carried in tanks intended for oil fuel. In ships in which it is not practicable to avoid putting water in oil fuel tanks, approved oily-water separator equipment shall be fitted, or an approved alternative means shall be provided for disposing of the oily-water ballast.

108. Anchors and Chain Cables—Every ship shall be provided to the satisfaction of the Chief Surveyor with such anchors and chain cables as are sufficient in number, weight and strength, having regard to the size and intended service of the ship.

109. Hawsers and Warps—Every ship shall be provided with such hawsers and warps as are sufficient in number and strength to securely moor the ship, having regard to the size and intended service of the ship.

110. Means of Escape—Passenger Ships

(1) Stairways and ladders shall be arranged to provide ready means of escape to the lifeboat and liferaft embarkation deck from all passenger and crew spaces in which the crew is normally employed, other than machinery spaces. In particular, the following provisions shall be complied with:

(a) Below the bulkhead deck two means of escape, at least one of which shall be independent of watertight doors, shall be provided from each watertight compartment or similarly restricted space or group of spaces. Exceptionally the Chief Surveyor may allow one means of escape, due regard being paid to the nature and location of spaces and to the number of persons who might normally be accommodated or employed there.

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

(c) If a radiotelegraph station has no direct access to the open deck, two means of escape from or access to such station shall be provided, one of which may be a porthole or window of sufficient size or another means to the satisfaction of the Chief Surveyor.

(d) A corridor or part of a corridor from which there is only one route of escape shall not exceed:

13m in length for ships carrying more than 36

passengers, and 7m in length for ships carrying not more than 36 passengers.

(e) At least one of the means of escape required by sub-clauses 1(a) and 1(b) of this clause shall consist of a readily accessible enclosed stairway, which shall provide continuous fire shelter from the level of its origin to the appropriate lifeboat and liferaft embarkation decks or the highest level served by the stairway, whichever level is the highest. However where dispensation has been granted under the provisions of sub-clause 1(a) of this clause the sole means of escape shall provide safe escape to the satisfaction of the Chief Surveyor. The width, number and continuity of the stairways shall be to the satisfaction of the Chief Surveyor.

(f) Protection of access from the stairway enclosures to the lifeboat and liferaft embarkation areas shall be to the satisfaction of the Chief Surveyor.

(g) Stairways serving only a space and a balcony in that space shall not be considered as forming one of the required means of escape.

(2) In special category spaces the number and disposition of the means of escape both below and above the bulkhead deck shall be to the satisfaction of the Chief Surveyor and in general the safety of access to the embarkation deck shall be at least equivalent to that provided for under sub-clauses 1(a), 1(b), 1(e), and 1(f) of this clause.

One of the escape routes from the machinery spaces where the crew is normally employed shall avoid direct access to any special category space.

(3) Two means of escape shall be provided from each machinery space. In particular, the following provisions shall be complied with:

(a) Where the space is below the bulkhead deck the two means of escape shall consist of either:

(i) two sets of steel ladders as widely separated as possible, leading to doors in the upper part of the space similarly separated and from which access is provided to the appropriate lifeboat and liferaft embarkation decks. One of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space; or

(ii) one steel ladder leading to a door in the upper part of the space from which access is provided to the embarkation deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the embarkation deck.

(b) Where the space is above the bulkhead deck, the two means of escape shall be as widely separated as possible and the doors leading from such means of escape shall be in a position from which access is provided to the appropriate lifeboat and liferaft embarkation decks. Where such means of escape require the use of ladders, these shall be of steel.

In a ship of less than 1000 gross tonnage, the Chief Surveyor may allow one of the means of escape to be dispensed with, due regard being paid to the width and disposition of the upper part of the space; and in a ship of 1000 gross tonnage and above, the Chief Surveyor may allow one means of escape to be dispensed with from any such space so long as either a door or a steel ladder provides a safe escape route to the embarkation deck, due regard being paid to the nature and location of the space and whether persons are normally employed in that space.

(4) In no case shall lifts be considered as forming one of the required means of escape.

(5) In every ship of Classes I, II, III and VI to which this Code applies, suitable signs shall be displayed in passageways and stairways indicating the direction of escape routes to passenger

muster stations. Such signs shall be continuously illuminated and shall be adequate in number and distribution. They shall be capable of being illuminated by the ship's emergency lighting system.

(6) All signs indicating escape routes, means of escape, location of muster stations and instructions for passengers in event of an emergency shall be in a form approved by the Chief Surveyor.

111. Means of Escape—Cargo Ships—(1) Stairways and ladders shall be so arranged as to provide, from all accommodation spaces and from spaces in which the crew is normally employed, other than machinery spaces, ready means of escape to the open deck and thence to the lifeboats and liferafts. In particular the following general provisions shall be complied with:

(a) At all levels of accommodation there shall be provided at least two widely separated means of escape from each restricted space or group of spaces.

(b)(i) Below the lowest open deck the main means of escape shall be a stairway and the second escape may be a trunk or a stairway.

(ii) Above the lowest open deck the means of escape shall be stairways or doors to an open deck or a combination thereof.

(c) Exceptionally the Chief Surveyor may dispense with one of the means of escape, due regard being paid to the nature and location of spaces and to the numbers of persons who normally might be quartered or employed there.

(d) No dead-end corridors having a length of more than 7m shall be accepted. A dead-end corridor is a corridor or part of a corridor from which there is only one escape route.

(e) The width and continuity of the means of escape shall be to the satisfaction of the Chief Surveyor.

(f) If a radiotelegraph station has no direct access to the open deck, two means of access to or egress from such station shall be provided, one of which may be a porthole or window of sufficient size or other means to the satisfaction of the Chief Surveyor, to provide an emergency escape.

(2) In all ro-ro cargo spaces where the crew is normally employed the number and locations of escape routes to the open deck shall be to the satisfaction of the Chief Surveyor but shall in no case be less than two and shall be widely separated.

(3) Except as provided in sub-clause (4) of this clause, two means of escape shall be provided from each machinery space of category A. In particular, one of the following provisions shall be complied with:

(a) two sets of steel ladders as widely separated as possible leading to doors in the upper part of the space similarly separated and from which access is provided to the open deck. In general, one of these ladders shall provide continuous fire shelter from the lower part of the space to a safe position outside the space. However, the Chief Surveyor may not require the shelter if, due to the special arrangement or dimensions of the machinery space, a safe escape route from the lower part of this space is provided. This shelter shall be of steel, insulated, where necessary, to the satisfaction of the Chief Surveyor and be provided with a self-closing steel door at the lower end; or

(b) one steel ladder leading to a door in the upper part of the space from which access is provided to the open deck and additionally, in the lower part of the space and in a position well separated from the ladder referred to, a steel door capable of being operated from each side and which provides access to a safe escape route from the lower part of the space to the open deck.

(4) In a ship of less than 1,000 gross tonnage, the Chief Surveyor may dispense with one of the means of escape required under sub-clause (3) of this clause due regard being

paid to the dimension and disposition of the upper part of the space.

(5) From machinery spaces other than those of category A, escape routes shall be provided to the satisfaction of the Chief Surveyor having regard to the nature and location of the space and whether persons are normally employed in that space.

(6) Lifts shall not be considered as forming one of the required means of escape as required by this clause.

Dated at Wellington this 31st day of October 1989.

W. P. JEFFRIES, Minister of Transport.

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