1976/297

THE SHIPPING (CARGO SHIP) CONSTRUCTION AND SURVEY RULES 1976

DENIS BLUNDELL, Governor-General

ORDER IN COUNCIL

At the Government House at Wellington this 29th day of November 1976

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

PURSUANT to the Shipping and Seamen Act 1952, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following rules.

ANALYSIS

RULES

1. Title and commencement—(1) These rules may be cited as the Shipping (Cargo Ship) Construction and Survey Rules 1976.

(2) These rules shall come into force on the 1st day of January 1977.

2. Interpretation—In these rules, unless the context otherwise requires,—

"Accommodation spaces" means passenger spaces, public rooms, corridors, lavatories, cabins, offices, crew spaces, shops, isolated pantries, and lockers and spaces similar to any of the foregoing, not being service spaces or open spaces on deck:

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

" 'B' class division" means a division complying with the requirements of rule 29 of these rules:

"Bulkhead deck" means the uppermost deck up to which the majority of transverse watertight bulkheads are carried:

"Chief Surveyor" means the officer of the Ministry of Transport for the time being holding the position of Chief Surveyor of Ships; and includes his deputy:

"Control station" means any space in which radio, main navigating equipment, or the emergency source of electrical power is located, or where fire-recording or fire-control equipment is centralised:

"Director" means the Director of the Marine Division of the Ministry of Transport; and includes his deputy:

"Existing ship" means a ship the keel of which was laid or construction of which was commenced before the commencement of these rules:

"Machinery space" means any space containing propelling machinery, boilers, oil-fuel units, steam engines, internal-combustion engines, generators, and major electrical machinery; and includes any oil-filling station, any space containing refrigerating, stabilising, ventilation, air conditioning, and similar machinery, and trunkways leading to any such space:

"New ship" means a ship that is not an existing ship:

"Non-combustible material" means material which, when heated to a temperature of 750°C, neither burns nor gives off inflammable vapours in sufficient quantity for self-ignition when tested in accordance with a standard approved by the Chief Surveyor; and the expression "combustible material" means any other material:

"Oil-fired boiler" means any boiler wholly or partly fired by liquid fuel, not being a domestic boiler of less than 263,000 kilojoules per hour:

"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 172 kilopascals (1.72 bars) gauge:

"Recognised survey authority" means a Government survey authority or Classification Society recognised by the Chief Surveyor for the purposes of these rules:

"Service spaces" means galleys, main pantries, laundries, store rooms (except isolated pantries and lockers), provision rooms, mail rooms, specie rooms, lamp rooms, paint rooms, workshops other than those forming part of machinery spaces, and trunkways leading to such spaces:

"Tons" means gross tons:

"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*:

Expressions defined in the Act have the meanings so defined.

3. Application—(1) These rules apply to ships, other than ships specified in subclauses (2) and (3) of this rule, as follows:

(a) Parts I to VII of these rules apply to every new ship that is a New Zealand ship or is engaged in the home trade (including restricted limits):

(b) Parts I to VII of these rules apply to every existing ship which on or after the date of commencement of these rules is converted for or brought into service as a New Zealand ship or as a ship in the home trade (including restricted limits) to such

*S.R. 1970/71

extent as the Chief Surveyor may consider reasonable and practicable in the case of that ship:

(c) Part VIII of these rules applies to every ship (whether new or existing) that is either a New Zealand ship or is engaged in the home trade (including restricted limits):

(2) Parts I to VII of these rules shall not apply to any existing ship that is either a New Zealand ship or is engaged in the home trade (including restricted limits) and which at the date of commencement of these rules is a ship in respect of which there is in force a New Zealand certificate of survey:

Provided that any ship referred to in this subclause which undergoes substantial structural conversion or repair after the date of commencement of these rules shall comply with such of the requirements of Parts I to VII as the Chief Surveyor considers reasonable and practicable, having regard to the nature and extent of that conversion or repair.

(3) These rules do not apply to passenger ships, troopships, fishing boats, pleasure yachts, ships not propelled by mechanical means, or ships not subject to survey under section 197 of the Act.

4. Structural strength, and submission of plans—(1) The structural strength of every ship to which these rules apply shall be sufficient for the service for which the ship is intended.

(2) In the case of every ship to which these rules apply which is to be built in New Zealand, the shipbuilder shall submit such plans and specifications to the Director as may be necessary to enable the Director to advise the Minister that the proposals relating to the construction of the ship comply with the requirements of these rules. The shipbuilder shall not commence construction of the ship until approval has been granted pursuant to section 196 of the Act.

(3) In the case of every ship to which these rules apply which is to be converted in New Zealand for use as a New Zealand ship or for service in the home trade, the shipbuilder shall submit such plans and specifications to a Surveyor of Ships as may be necessary to enable the Surveyor to determine whether the proposals relating to the construction of the ship comply with the requirements of these rules.

(4) In the case of every ship to which these rules apply which is built or converted outside New Zealand for use as a New Zealand ship or which is to be engaged in the home trade, the Chief Surveyor may accept a certificate from a recognised survey authority in the country in which the ship is built or converted as evidence that the ship complies with all or part of the requirements of these rules or of rules which the Chief Surveyor is satisfied are substantially equivalent to these rules.

(5) In the case of every ship to which these rules apply, the shipbuilder shall supply such information as the Chief Surveyor may require in order to be satisfied that the stability of the ship will be sufficient for its intended service.

PART I—WATERTIGHT SUBDIVISION

5. Watertight bulkheads—(1) Every ship of 15 m in length or over to which this Part of these rules applies shall be provided with a collision bulkhead which shall be watertight up to the bulkhead deck, or

to the weather deck in a single deck ship, and with such other bulkheads as the Chief Surveyor considers necessary for the safety of the ship and of the persons on board.

(2) Every ship of less than 15 m in length to which this Part of these rules applies shall be provided with such watertight bulkheads and such other bulkheads as the Chief Surveyor considers necessary for the safety of the ship and of the persons on board.

6. Construction of watertight bulkheads, etc.—(1) In every ship to which this Part of these rules applies, every portion of the ship required by these rules to be watertight shall be of adequate design and construction.

(2) In every such ship all tanks forming part of the structure of the ship and used for the storage of oil fuel or other liquids, including double bottoms, peak tanks, settling tanks, and bunkers shall be of a design and construction adequate for that purpose.

7. Openings in watertight bulkheads, etc.—(1) In every ship to which this Part of these rules applies, the number of openings in bulkheads and other structures required by these rules 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 in any such ship shall not pierce those 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 in any such ship. 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 weather deck of any such ship.

(5) Notwithstanding anything in subclauses (3) and (4) of this rule, the Chief Surveyor may permit any such 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.

(6) In every ship to which this Part of these rules applies—

(a) Valves and cocks not forming part of a pipe system shall not be fitted in any bulkhead required by these rules 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) The collision bulkhead of such a ship shall not be pierced below the bulkhead deck by more than 1 pipe:

Provided that if the forepeak in such a ship is divided to hold 2 different kinds of liquids, the collision bulkhead may be

pierced below the bulkhead deck by not more than 2 pipes. Any pipe which pierces the collision bulkhead of such a ship shall be fitted with a screw-down valve capable of being operated from above the bulkhead deck, the valve chest being secured to the forward side of the collision bulkhead:

Provided also that in ships of less than 500 tons the Chief Surveyor may permit a watertight bulkhead to be pierced by a valve for draining into the compartment immediately adjacent to that bulkhead.

8. Means of closing openings in watertight bulkheads—In every ship to which this Part of these rules applies efficient means shall be provided for closing and making watertight all openings in bulkheads and other structures required by these rules to be watertight.

9. Watertight doors—(1) In every ship to which this Part of these rules 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.

10. Openings in the sides of the ship—(1) Efficient means shall be provided for preventing the accidental admission of water into any ship to which this Part of these rules applies through any openings in the sides of the ship.

(2) In every ship to which this Part of these rules applies, side scuttles, windows, and other openings in the shell plating, super-structure, and deckhouses and their means of closing shall be of efficient design and construction and of sufficient strength, having regard to the spaces in which they are fitted and to the intended service of the ship.

(3) In every ship to which this Part of these rules applies, efficient inside deadlights, which can be effectively closed and secured watertight, shall be provided for all sidescuttles to spaces below the weather deck.

(4) In every ship to which this Part of these rules applies, every sidescuttle below the bulkhead deck shall be fitted with an efficient hinged deadlight permanently attached so that it can be effectively closed and secured watertight.

(5) The arrangements for closing each such opening shall be consistent with its intended purpose, and shall be such as will ensure watertightness.

(6) In every ship to which this Part of these rules applies, 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.

(7) 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.

(8) Main and auxiliary inlets 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 other material approved by the Chief Surveyor. If made of steel, such cocks and valves shall be protected against corrosion.

(9) All discharge pipes led through the shell plating below the bulkhead deck in such a ship and the valves relating thereto shall be protected from damage.

(10) Any gangway port, cargo port, or coaling port fitted below the bulkhead deck of such a ship shall be of adequate strength, and its lowest point shall not be below the ship's deepest load water line.

11. Weather deck—(1) In every ship to which this Part of these rules applies, 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, he 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.

(3) The number, size, and disposition of the drain wells and drain pipes shall be approved by the Chief Surveyor. Drains fitted pursuant to this rule may be combined with and form part of any drainage system fitted in accordance with the requirements of rule 35 (4) of these rules.

Part II—Bilge-pumping Arrangements

12. General—Every ship to which this Part of these rules applies shall be provided with an efficient pumping plant capable of pumping from any watertight compartment in the ship, other than a space permanently appropriated for the carriage of fresh water, water ballast, or oil and for which other efficient means of pumping or drainage is provided, under

all conditions likely to arise in practice after a casualty, whether or not the ship remains upright or is inclined not more that 5° either way. Wing suctions shall be provided if necessary for that purpose. Efficient arrangements shall be provided whereby water in any watertight compartment may find its way to the suction pipes. Efficient means shall be provided for draining water from all insulated holds and insulated between decks in such a ship:

Provided that the Chief Surveyor may allow the provision for drainage to be omitted in a particular compartment if he 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.

13. Number and type of bilge pumps: Ships of 90 m in length or over—Every ship of 90 m in length or over to which this Part of these rules applies shall be provided in the machinery space with at least 2 bilge pumps connected to the bilge main and operated by power otherwise than from the ship's main engines.

14. Number and type of bilge pumps: Ships of less than 90 m in length—(1) Every ship of less than 90 m in length to which this Part of these rules applies shall be provided with bilge pumps in accordance with the following table:

Length of Ship in Metres	Number of Pumps	
	Main Engine Pump*	Independent Power Pumps
Under 15	1†	.....
15 and under 30	1	1‡
30 and under 90	1	1

*The main engine pump may be replaced by 1 independent power pump.
†For ships plying not beyond restricted limits the main engine pump may be replaced by a hand pump of a type approved by the Chief Surveyor.
‡For ships plying not beyond restricted limits the independent power pump may be replaced by a hand pump of a type approved by the Chief Surveyor.

(2) In this rule the expression "independent power pump" means a pump operated by power otherwise than from the ship's main engines.

15. Requirements for bilge pumps—(1) Every bilge pump provided in a ship in compliance with these rules shall be self-priming, unless efficient means of priming are provided. Every such pump, other than a pump provided for peak compartments only, shall, whether operated by hand or by power, be so arranged as to be capable of drawing water from any space required by rule 13 of these rules to be pumped out.

(2) Every power bilge pump in a ship to which this Part of these rules applies shall be capable of giving a speed of water of not less than 122 m per minute through the ship's main bilge pipe when its diameter is that determined by rule 18 of these rules.

16. Bilge suctions—(1) There shall be provided in the stokehold of every ship to which this Part of these rules applies, being a coal-burning ship, a flexible suction hose of sufficient length to reach from a fitting on an independent power bilge pump in the ship to each side of the stokehold bilges. The hose shall be in addition to the other bilge suctions required by this rule, and shall have an internal diameter of 100 mm or that of the main bilge suction, whichever is the less.

(2) Every bilge pump fitted in the machinery space is to have a direct bilge suction.

17. Arrangement of bilge pipes—(1) In every ship to which this Part of these rules applies, all bilge pipes for draining cargo spaces or any part of the machinery space shall be distinct from other pipes which may be used for filling or emptying spaces in which water or oil is carried.

(2) All bilge pipes in any such ship shall be of material approved by the Chief Surveyor, and shall be fitted with such valves, cocks, distribution boxes, strums, and mud boxes as the Chief Surveyor considers necessary for an effective bilge pumping system.

18. Diameter of bilge suction-pipes—(1) Subject to subclauses (2) and (3) of this rule, in every ship to which this Part of these rules applies, the internal diameter of main and branch bilge suction-pipes shall be determined to the nearest 5 mm, calculated according to the following formulae:

$$d_m = 25 + 1.68 \sqrt{(L(B + D))}$$

$$d_b = 25 + 2.15 \sqrt{(l(B + D))}$$

where

d_m is the internal diameter of the main bilge suction-pipe in millimetres.

d_b is the internal diameter of the branch bilge suction-pipe in millimetres.

L is the register length of the ship in metres.

B is the moulded breadth of the ship in metres.

D is the moulded depth of the ship to the bulkhead deck in metres.

l is the length of compartment in metres.

(2) In no case is the diameter of the main bilge suction-pipe to be less than is required for any branch bilge suction-pipe.

(3) No branch bilge suction-pipe shall have a bore less than the size specified in the following table.

Register Length of Ship	Minimum Bore
30 m or over	50 mm
10 m or more but less than 30 m	38 mm
Less than 10 m	32 mm

19. Precautions against flooding through bilge pipes—(1) In every ship to which this Part of these rules applies, 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.

(2) In every such ship provision shall be made to prevent the flooding of any watertight compartment served by a bilge suction-pipe in the event of the pipe being severed or otherwise damaged in any other watertight compartment through collision or grounding.

PART III—ELECTRICAL EQUIPMENT AND INSTALLATIONS

20. General—In every ship to which this Part of these rules applies, the electrical equipment and installations (including any electrical means of propulsion) shall be such that the ship and all persons on board are protected against electrical hazards and shall conform with such standards as the Director may specify from time to time in Instructions to Surveyors, except so far as those standards are inconsistent with these rules.

21. Main generating sets—Every ship to which this Part of these rules applies which proceeds beyond restricted limits, being a ship in which electrical power is the only power for maintaining the auxiliary services essential for the propulsion or safety of the ship, shall be provided with 2 or more main generating sets of such power that the aforesaid services can be operated when any one of the sets is out of service.

22. Emergency source of electric power—(1) In every ship of 500 tons or over to which this Part of these rules applies, a self-contained emergency source of electric power, so arranged as to ensure its functioning in the event of fire or other casualty causing failure to the main electrical installation shall be provided.

(2) The emergency source of electric power shall be located in a position as required by the Chief Surveyor, and, in the case of ships of 5,000 tons or over, shall be located above the uppermost continuous deck, outside the machinery casings and not forward of the collision bulkhead.

(3) The emergency source of electric power required by subclause (1) of this rule shall be sufficient to supply, for a period of at least 6 hours in the case of a ship of 5,000 tons or over, and for a period of at least 3 hours in the case of a ship of under 5,000 tons, all those services which, in the opinion of the Chief Surveyor, are necessary for the safety of all on board in an emergency, due regard being paid to such services as may be operated simultaneously. Special consideration shall be given to the following services:

(a) The ship's emergency lights at every boat station, liferaft launching station, in all alleyways, stairways, and exits, in the machinery space, in the control stations, and in the place where the emergency generator, if any, is situated; and

(b) The general alarm signal if electrically operated; and

(c) The ship's navigation lights, if solely electric; and

(d) The ship's daylight signalling lamp, if it is operated by the ship's main source of electric power.

(4) The emergency source of electric power shall be either an accumulator (storage) battery capable of complying with subclause (2) of this rule without being recharged 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 flash point of not less than 43°c.

(5) The emergency source of electric power shall be so arranged that it will operate efficiently when the ship is inclined 22½ degrees, or when the trim of the ship is 10 degrees, or both.

(6) If the emergency source of electric power is an accumulator (storage) battery, the arrangements shall be such that the ship's emergency lighting system will come into operation automatically in the event of the failure of the main source of power for the ship's main lighting system.

(7) Means shall be provided for the periodical testing of the emergency source of power, including the testing of automatic arrangements.

(8) An indicator shall be provided in the machinery space, on the main switchboard or at some other suitable position, to show when any accumulator (storage) battery fitted in accordance with this rule is being discharged.

23. Emergency switchboards—In every ship in which the provision of an emergency source of electric power is required by these rules—

(a) The emergency switchboard shall be situated as near as practicable to the emergency source of power; and

(b) If the emergency source of power is a generator, the emergency switchboard shall be situated in the same space as the generator unless the operation of the switchboard would thereby be impaired and an alternative position is approved by the Chief Surveyor.

24. Distribution systems—(1) In every ship to which this Part of these rules applies, every main and emergency switchboard shall be so arranged as to give easy access to the front and where necessary to the back thereof without danger to any person and shall be suitably guarded. A non-conducting mat or grating shall be provided at the back and front where necessary. No exposed parts which may have a voltage between conductors or to earth exceeding 250 volts direct current or 55 volts alternating current shall be installed on the face of any switchboard or control panel.

(2) Hull return shall not be used in any such ship for the power, heat, and light distribution systems thereof, except with the approval of the Chief Surveyor.

(3) If in any such ship 2 or more generating sets may be in operation at the same time for maintaining the auxiliary services essential for the propulsion or safety of the ship, provision shall be made for the sets to operate in parallel, and means shall be provided to trip automatically sufficient non-essential load when the total current exceeds the connected generator capacity.

(4) In every such ship of 5,000 tons or over, electric and electro-hydraulic steering gear shall be served by 2 circuits fed from the main switchboard, one of which may pass through the emergency switchboard,

if one is provided. Each circuit shall have adequate capacity for supplying all the motors which are normally connected to it and which operate simultaneously, and, if transfer arrangements are provided in the steering gear room to permit either circuit to supply any motor or combination of motors, the capacity of each circuit shall be adequate for the most severe load condition. The circuits shall be separated as widely as is practicable throughout their length.

(5) In every such ship of under 5,000 tons in which electric power is the sole source of power for both main and auxiliary steering gear, the arrangements shall comply with the requirements of subclause (2) of this rule, except that if the auxiliary steering gear is powered by a motor primarily intended for other services, suitable overload protection may be fitted.

(6) Short circuit protection only shall be provided for circuits and motors of electrically or electro-hydraulically operated steering gears.

(7) Every such ship which is fitted with electric or electro-hydraulic steering gear shall be provided with indicators which will show when the power units of that steering gear are running. These indicators shall be situated in suitable positions on the navigating bridge and in the machinery space or the machinery control room.

25. General electrical precautions—(1) In every ship to which this Part of these rules applies, all electrical equipment shall be so constructed and installed that there will be no danger of injury to any person handling it in a proper manner. Subject to the provisions of subclause (2) of this rule, where electrical equipment supplied as ship's equipment is to be operated at a voltage in excess of 55 volts, the exposed metal parts of the equipment which are not intended to have a voltage above that of earth, but which may have such a voltage under fault conditions, shall be earthed.

(2) Exposed metal parts of portable electric lamps, tools, and similar apparatus, supplied as ship's equipment to be operated at a voltage in excess of 55 volts shall be earthed through a conductor in the supply cable, unless by the use of double insulation or a suitable isolating transformer, protection at least as effective as earthing through a conductor is provided. When electric lamps, tools, or other apparatus are used in damp spaces, provision shall be made, so far as practicable, to ensure that the danger of electric shock is reduced to a minimum.

(3) In every ship to which this Part of these rules applies, every electric cable shall, at every position at which an electrical fault may cause a fire be flame-retardant sheathed or armoured or otherwise equally effectively protected. All metal sheaths and metal armour of electrical cable in every such ship shall be electrically continuous, and shall be earthed.

(4) Wiring in every such ship shall be supported in such a manner as to avoid chafing and other injury.

(5) In every such ship, lighting fittings shall be arranged to prevent rises in temperature which would be injurious to the electrical wiring thereof or which would result in a risk of fire in the surrounding material.

(6) Every electric space-heater forming part of the equipment of such a ship shall be fixed in position, and shall be so constructed as to reduce the risk of fire to a minimum. No such heater shall be constructed with

an element so exposed that clothing, curtains, or other material can be scorched or set on fire by heat from the element.

(7) In every such ship, every separate electrical circuit, other than a circuit which operates the ship's steering gear, shall be protected against overload and short circuit. There shall be clearly and permanently indicated on or near each overload protective device the current-carrying capacity of the circuit which it protects and the rating or setting of the device.

(8) In every such ship, all accumulator (storage) batteries shall be housed in boxes or compartments which are so constructed as to protect the batteries from damage and are so ventilated as to minimise the accumulation of explosive gas. Devices liable to arc shall not be installed in any compartment assigned principally to accumulator batteries, unless the devices are flame-proof and explosion-proof.

(9) In spaces where inflammable mixtures are liable to collect, no electrical equipment shall be installed unless it is of a type which will not ignite the mixture concerned.

(10) In every such ship, every lighting circuit in a bunker or hold shall be provided with an isolating switch outside the space.

26. Spare parts and tools—Every ship to which this Part of these rules applies 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 IV—Fire Protection: Ships of 45 Metres in Length Or Over

27. Application of this Part—This Part of these rules applies to every ship of 45 m in length or over:

Provided that the Chief Surveyor may require additional fire safety measures in oil tankers and in other ships having a high fire risk.

28. Structure—(1) The hull, superstructure, structural bulkheads, decks, and deckhouses, of every ship to which this Part of these rules applies shall be constructed of steel or of such other materials as the Chief Surveyor may approve, having regard to the risk of fire.

(2) The corridor bulkheads serving accommodation spaces and control stations shall be constructed of steel or of "B-15" class divisions, except that "B-0" class divisions may be fitted—

(a) In any portion of a corridor bulkhead which abuts on spaces containing no significant fire load; and

(b) Where a corridor is provided with 2 or more exits through doors leading directly to an open deck on the same level, in the end portions of the corridor bulkheads over a distance not exceeding 6 m measured from any such exit.

29. "B" class divisions—(1) "B" class divisions are 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 following time listed:

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:

(d) The Chief Surveyor may require a test of a prototype division to ensure that it meets the foregoing requirements for integrity and temperature rise.

(2) In this rule the term "standard fire test" means a test in which specimens of the relevant bulkheads or decks, having a surface area of not less than 4.65 m^2 and a height or length of deck of 2.44 m, resembling as closely as possible the intended construction and including where appropriate at least one joint, are exposed in a test furnace to a series of time temperature relationships, 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.

30. Openings in "B" class divisions—(1) Where "B" class divisions are penetrated for the passage of electrical cables, pipes, trunks, ducts, and similar devices or for the fitting of ventilation terminals, lighting fixtures, and similar devices, arrangements shall be made to assure that the fire resistance is not impaired.

(2) 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 the divisions, except that ventilation openings may be permitted in the lower portion of such doors. Where such an opening is in or under a door, the total net area of any such opening or openings shall not exceed 0.05 m^2. When such an opening is cut in a door, it shall be fitted with a grill made of non-combustible material. Doors shall be non-combustible.

31. Interior stairways, ladders, and crew-lift trunks—In every ship to which this Part of these rules applies, interior stairways, ladders, and crew-lift trunks within accommodation spaces shall be constructed of steel or other material which by itself or due to insulation provided has structural and integrity properties equivalent to steel at the end of an appropriate fire test.

32. Boundary bulkheads and bulkheads separating galley, etc., from accommodation space—The boundary bulkheads of any emergency generator room and the bulkheads separating a galley, paint room, lamp room, or boatswain's store from an accommodation space shall be constructed of steel or other material which by itself or due to insulation provided has structural and integrity properties equivalent to steel at the end of an appropriate fire test.

33. Deck coverings—In every ship to which this Part of these rules applies, deck coverings within accommodation spaces and control stations, shall be of a type which will not readily ignite.

34. Ventilation systems—(1) The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the space being ventilated.

(2) Ventilation ducts shall be constructed of steel or other materials approved by the Chief Surveyor.

35. Protection of cargo spaces containing motor vehicles with fuel in their tanks for their own propulsion—(1) In any cargo space containing motor vehicles with fuel in their tanks for their own propulsion, the following provisions shall be complied with:

(a) *Fire Detection*—There shall be provided an approved automatic fire detection and fire alarm system complying with the provisions of rule 115 of the Shipping Fire Appliances Rules 1969*:

(b) *Fire Extinguishing Arrangements*—There shall be fitted a fixed fire extinguishing installation, which shall comply with the provisions of rule 101 of the Shipping Fire Appliances Rules 1969*.

(2) *Ventilation System*—

(a) In any such cargo space there shall be provided an effective power ventilation system sufficient to give at least 10 air changes per hour. The system for such cargo spaces shall be entirely separated from other ventilation systems, and shall be operating at all times when vehicles are in 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.

(3) *Precautions Against Ignition of Inflammable Vapours*—

(a) 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 inflammable vapours shall not be permitted:

(b) 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.

(4) *Bilge Pumping and Drainage*—In an enclosed cargo space which is provided with a fixed-pressure water-spraying system complying

with rule 109 of the Shipping Fire Appliances Rules 1969* scuppers or drains shall be provided port and starboard not less than 150 mm in diameter spaced not more than 9.15 m apart.

Where the inboard end of the scuppers would be below the load waterline when the ship is inclined to an angle of less than 15 degrees, the scuppers or drains shall be led to separate drain tanks which can be pumped overboard by the ship's bilge or ballast pumps. Where a continuous middle-line division or machinery casing is arranged in way of the cargo space, additional scuppers or drains shall be fitted adjacent to the division or casing.

Valves of screw-down non-return type are to be incorporated in such scuppers or drains, and are to be operable from a deck above the enclosed cargo space in which such scuppers or drains are provided.

Where the rate of discharge of water from the water-spraying system exceeds that prescribed in rule 109 of the Shipping Fire Appliances Rules 1969*, the Chief Surveyor may require the capacity of the scuppers or drains to be increased.

36. Openings in machinery spaces and means for closing such openings—(1) 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.

(2) The flaps of such skylights where fitted shall be of steel. Suitable arrangements shall be made to permit the release of smoke in the event of fire.

37. Miscellaneous items of fire protection—The following provisions shall apply to every ship to which this Part of these rules applies:

(a) Paints, varnishes or similar preparations shall not be used if they contain a nitro-cellulose or other highly inflammable base, and fabrics containing nitro-cellulose shall not be fitted:

(b) Any pipe which penetrates a "B" class division shall be of suitable material, and shall have regard to the temperature such divisions are required to withstand:

(c) Pipes intended for oil or other inflammable liquids shall be of material approved by the Chief Surveyor, having regard to the risk of fire:

(d) Overboard scuppers, sanitary discharges, or other outlets close to the waterline shall not be of a material likely to fail in the event of fire and thereby give rise to a danger of flooding:

(e) Cellulose-nitrate film shall not be used in cinematograph installations.

Part V—Fire Protection: Ships of Less than 45 Metres in Length

38. Application of this Part—This Part of these rules applies to ships of less than 45 m in length:

Provided that the Chief Surveyor may require additional fire safety measures in oil tankers and in other ships having a high fire risk.

*S.R. 1969/75

39. Structure of ship—The hull, superstructure, structural bulkheads, decks, and deckhouses of every ship to which this Part of these rules applies shall be constructed of steel, or of such other materials as the Chief Surveyor approves, having regard to the risk of fire.

40. Divisions—In every ship to which this Part of these rules applies, being a ship fitted with internal-combustion propelling machinery or oil-fired boilers, the accommodation spaces shall be separated from machinery spaces by—

(a) In the case of a ship of 21 m in length or over, "B–15" class divisions:

(b) In the case of a ship of less than 21 m in length, divisions constructed to the satisfaction of the Chief Surveyor.

41. Miscellaneous items of fire protection—The following provisions shall apply to every ship to which this Part of these rules applies:

(a) Paints, varnishes, or similar preparations shall not be used if they contain a nitro-cellulose or other highly inflammable base, and fabrics containing nitro-cellulose shall not be fitted:

(b) Any pipe which penetrates a "B" class division shall be of suitable material, and shall have regard to the temperature such divisions are required to withstand:

(c) Pipes intended for oil or other inflammable liquids shall be of material approved by the Chief Surveyor, having regard to the risk of fire:

(d) Overboard scuppers, sanitary discharges, or other outlets close to the waterline shall not be of a material likely to fail in the event of fire and thereby give rise to a danger of flooding:

(e) Any deck coverings within accommodation spaces or control stations shall be of a type which will not readily ignite:

(f) Cellulose-nitrate film shall not be used in cinematograph installations.

Part VI—Boilers and Machinery

42. General—In every ship to which this Part of these rules applies, the machinery, boilers, and other pressure vessels 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 minimise any danger to persons on board. Without prejudice to the generality of the foregoing, means shall be provided which shall prevent overpressure in any part of such machinery, boilers, and other pressure vessels, and, in particular, every boiler and every unfired steam generator shall be provided with not less than 2 safety valves:

Provided that the Chief Surveyor may, having regard to the output or any other features of any boiler or unfired steam generator, permit only 1 safety valve to be fitted if he is satisfied that adequate protection against overpressure is thereby provided.

43. Boilers and other pressure vessels—(1) In every ship to which this Part of these rules applies, every boiler or other pressure vessel and its respective mountings shall, before being put into service for the first

time, be subjected to such hydraulic test or tests as the Chief Surveyor specifies, and every such boiler or other pressure vessel or mounting shall at any time thereafter be capable of withstanding such test or tests as the Chief Surveyor specifies.

(2) Provision shall be made which will facilitate the cleaning and inspection of every pressure vessel.

44. Machinery—(1) In every ship to which this Part of these rules applies, main and auxiliary machinery necessary for the propulsion and safety of the ship shall be provided with effective means of control, and the machinery shall be capable of being brought into operation when initially no power is available in the ship.

(2) In every such ship, where risk from over-speeding of machinery exists, means shall be provided to ensure that the safe speed is not exceeded.

(3) In every such ship, where main or auxiliary machinery or any parts of such machinery are subject to internal pressure, those parts shall before being put into service for the first time be subjected to such hydraulic test or tests as the Chief Surveyor specifies, and those parts shall at any time thereafter be capable of withstanding such test or tests as the Chief Surveyor specifies.

45. Means of going astern—Every ship to which this Part of these rules applies shall have sufficient power for going astern to secure proper control of the ship in all normal circumstances.

46. Shafts—In every ship to which this Part of these rules applies every shaft shall be so designed and constructed that it will withstand the maximum working stresses to which it may be subjected, with a factor of safety approved by the Chief Surveyor.

47. Boiler-feed systems—(1) In every ship to which this Part of these rules applies, every boiler which provides services essential for the safety of the ship, and which could be rendered dangerous by the failure of its feed water supply, shall be provided with not less than 2 efficient and separate feed water systems so arranged that either of those systems may be opened for inspection or overhaul without affecting the efficiency of the other. Means shall be provided which will prevent overpressure in any part of the systems.

(2) If in any such ship it is possible for oil to enter the feed water system of a boiler, the arrangements for supplying boiler feed water shall provide for the interception of oil in the feed water.

(3) Every feed check valve, fitting, or pipe through which feed water passes from a pump to such boilers in any such ship shall be designed and constructed to withstand the maximum working stresses to which it may be subjected, with a factor of safety approved by the Chief Surveyor. Every such valve, fitting, or pipe shall before being put into service for the first time, be subjected to such hydraulic test or tests as the Chief Surveyor specifies. The feed pipes shall be adequately supported.

48. Steam-pipe systems—(1) In every ship to which this Part of these rules applies, every steam pipe and 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 approved by the Chief Surveyor.

(2) Without prejudice to the generality of the foregoing, every such steam pipe or fitting shall, before being put into service for the first time, be subjected to such test or tests as the Chief Surveyor specifies, and shall at any time therafter be capable of withstanding such test or tests as the Chief Surveyor specifies.

(3) Steam pipes shall be supported to the satisfaction of a Surveyor.

(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 conditions likely to arise in the course of the intended service of the ship.

(6) If in any ship to which this Part of these rules applies a steam pipe may receive steam from any source at a higher pressure than it can withstand with a factor of safety approved by the Chief Surveyor, an efficient reducing valve, relief valve, and pressure gauge shall be fitted to that pipe.

49. Air-pressure systems—(1) In every ship to which this Part of these rules applies, being a 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) In every such ship the parts of every such compressed-air system other than a pneumatic-control system, which are subjected to air pressure shall be designed and constructed to withstand, with a factor of safety approved by the Chief Surveyor, the maximum working stresses to which they may be subjected, and every air-pressure pipe or fitting in such system shall, before being put into service for the first time, be subjected to such test or tests as the Chief Surveyor specifies and be maintained in an efficient condition.

(3) Means shall be provided in any such ship to prevent overpressure in any part of any such compressed-air system, and, where water jackets or casings of air compressors and coolers might be subjected to dangerous overpressure due to leakage into them from air-pressure parts, suitable pressure-relief arrangements shall be provided.

(4) Provision shall be made to reduce to a minimum entry of oil into any such air-pressure system and to drain the system. Provision shall also be made to protect the system from the effects of internal explosion.

(5) In every ship to which this Part of these rules applies, 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.

50. Cooling-water systems—In every ship of 45 m in length or over to which this Part of these rules applies in which cooling water services are essential for the running of the propelling machinery, there shall be at least 2 means of operating such water services.

51. Lubricating and other oil systems—In every ship of 45 m in length or over to which this Part of these rules applies 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.

52. Oil and gaseous-fuel installations—(1) In every ship to which this Part of these rules applies, oil fuel provided for use in boilers or machinery shall have a flash point of not less than 61°C (closed test):

Provided that the Chief Surveyor may, subject to such conditions as he may impose,—

(a) Permit any ship to use oil fuel having a flash point of not less than 54°C in boilers:

(b) Permit any ship to use oil fuel having a flash point of not less than 43°C in internal-combustion type machinery:

(c) Permit any ship of less than 15 m in length to use oil or petroleum fuel having a flash point of less than 43°C in internal-combustion type machinery:

(d) Permit the use of gaseous fuel in ships designed for the carriage of liquefied gas if such fuel results solely from evaporation of the cargo carried:

Provided also that nothing in this subclause shall apply to fuel provided for emergency generator machinery permitted by rule 22 of these rules.

(2) In every ship to which this Part of these rules applies, being a ship in which oil or gaseous fuel is used, 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 of persons on board is preserved.

(3) In every ship to which this Part of these rules applies, being a ship in which oil or gaseous fuel is used in engines or boilers for the propulsion or safety of the ship, the arrangements for the storage, distribution, and utilisation of the fuel shall be such that the effective use of the engines can be maintained under all conditions likely to be met by the ship service.

(4) Every oil-fuel installation which serves a boiler supplying steam for the propulsion of the ship shall include not less than 2 oil-fuel units.

(5) Every oil-fuel tank in such a ship shall, where necessary, be provided with save-alls or gutters which will catch any oil which may leak from the tank. No such tank shall be situated directly above boilers or other heated surfaces. Without prejudice to the generality of the foregoing, every such tank shall, before being put into service for the

first time, be subjected to a test by hydraulic pressure in the case of a storage tank, settling tank, or service tank, equal to that of a head of water 0.3 m greater than the greatest head to which the tank may be subject when in service, but in the case of a settling tank, to not less than 103 kPa (1.03 bars) and every such tank shall at any time thereafter be capable of withstanding such a test.

(6) No oil tank shall be situated where spillage or leakage therefrom can constitute a hazard by falling on heated surfaces.

(7) The oil fuel carried in such a ship shall be effectively isolated from water ballast which may be carried therein. The pumping arrangements shall be such as will permit the oil fuel to be transferred from any storage tank or settling tank appropriated for oil fuel into another storage tank or settling tank so appropriated. Provision shall be made to prevent the accidental discharge or overflow of oil overboard. If fresh water is stored in a tank adjacent to a tank appropriated for the storage of oil fuel, a coffer dam shall be provided which will prevent contamination of the fresh water by the oil.

(8) In every such ship safe and efficient means of ascertaining the amount of oil fuel contained in any oil tank shall be provided. Sounding pipes with suitable means of closure may be approved if their upper ends terminate in safe positions. Other means of ascertaining the amount of oil fuel contained in any oil-fuel tank may be approved if they do not require penetration below the top of the tank, and provided their failure or overfilling of the tanks will not permit release of fuel thereby.

(9) In every such ship, an air pipe shall be led from every oil-fuel tank to the open air, and the outlet thereof shall be in such a position that there will be no danger of fire or explosion resulting from the emergence of oil vapour from the pipe when the tank is being filled. Every such pipe shall be fitted with a detachable wire-gauze diaphragm. If that pipe also serves as an overflow pipe, provision shall be made which will prevent the overflow from running into or near a boiler room, galley, or other place in which it might be ignited.

(10) In every such ship, save-alls or gutters shall be provided under every oil-fuel pump, filter, and heater to catch any oil which may leak or be spilled therefrom. Save-alls or gutters shall be provided in way of the furnace mouths to catch oil which may escape from the burners. Provision shall be made which will prevent oil which may escape under pressure from any oil-fuel pump, filter, or heater from coming into contact with boilers or other heated surfaces.

(11) Every oil-fuel separator in such a ship shall be of efficient design and substantial construction. Provision shall be made which will prevent overpressure in any part thereof and which will prevent the discharge of oil vapour therefrom into confined spaces.

(12) If in any ship to which these rules apply, being a ship propelled by means of oil-fired boilers, dampers are fitted to the funnels or boilers, provision shall be made for securing the dampers in the open position and an indicator shall be provided to show whether the dampers are open or shut.

(13) For the purposes of this rule the expression "oil-fuel tank" includes an oil-fuel storage tank, an oil-fuel settling tank, an oil-fuel service tank, and an oil-fuel overflow tank.

53. Oil-fired galley equipment—(1) If in any ship to which this Part of these rules applies a cooking range or other heating appliance is supplied with fuel from an oil tank, the tank shall not be situated in a galley, and the supply of oil to the burners shall be capable of being controlled from a position outside the galley.

(2) The tank shall be provided with an air pipe leading to the open air. The pipe shall be in such a position that there will be no danger of fire or explosion resulting from the emergence of oil vapour from the pipe when the tank is being filled. The pipe shall be fitted with a detachable wire-gauze diaphragm.

(3) Safe and efficient means shall be provided for filling every such tank.

54. Ventilation—In every ship to which this Part of these rules applies, every machinery space in which an oil-fuel tank or any part of an oil-fuel installation is situated shall be adequately ventilated to prevent the accumulation of oil vapour.

55. Communication between bridge and engineroom—(1) Every ship of 45 m in length or over to which this Part of these rules applies shall be provided with at least 2 means of communicating orders from the navigating bridge to the engineroom control position. One of the means shall be an engineroom telegraph.

(2) Every ship of less than 45 m in length to which this Part of these rules applies shall have such means of communication between the navigating position and the engine-control position as the Chief Surveyor considers necessary in the case of that ship.

56. Steering gear—(1) Every ship to which this Part of these rules applies shall be provided with efficient main and auxiliary steering gear:

Provided that if—

(a) In the case of electric steering gear, the electric motor and its associated electrical equipment; or

(b) In the case of electro-hydraulic steering gear, the electric motor, its associated electrical equipment, and connected pump; or

(c) In the case of steam-hydraulic or pneumatic-hydraulic steering gear, the driving engine and connected pump—

and their connections are fitted in duplicate to the satisfaction of the Chief Surveyor and each power unit enables the steering gear to meet the requirements of paragraph (b) of subclause (2) of this rule, no auxiliary steering gear shall be required.

(2) In every such ship—

(a) The main steering gear shall be of adequate strength and sufficient to steer the ship at the greatest speed which the ship is designed to maintain at sea at her deepest sea-going draught, and in every ship of 45 m in length or over shall be operated by power. The main steering gear, including the rudder and associated fittings, and rudder stock shall be so designed that they are not damaged at maximum astern speed:

(b) The main steering gear shall be capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the ship running ahead at the greatest speed which

the ship is designed to maintain at sea at her deepest sea-going draught. The rudder shall be capable of being put over from 35 degrees on either side to 30 degrees on the other side in 28 seconds with the ship running ahead at that speed:

(c) The auxiliary steering gear shall be capable of being rapidly brought into action and shall be of adequate strength and of sufficient power to enable the ship to be steered at the minimum speed at which the ship can be effectively steered in the ahead direction, and in any such ship in which a rudder stock of over 350 mm diameter in way of the tiller is required to comply with paragraph (a) of this subclause, the auxilliary steering gear shall be operated by power.

(3) In every such ship which is fitted with power-operated steering gear the position of the rudder shall be indicated at the principal steering station.

(4) In ships of less than 20 m in length, the provision of a spare tiller on or near the rudder stock shall meet the requirements of this rule for auxiliary steering gear.

57. Lifts—The construction and installation of every lift used for carrying persons, cargo, vehicles, or ship's stores on board a ship to which this Part of these rules applies shall comply with such specifications as the Chief Surveyor considers necessary.

58. Spare gear and tools—(1) Every ship to which this Part of these rules applies 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) In the case of such ships of 90 m in length or over, the spare gear and tools referred to in subclause (1) of this rule shall not all be stored in 1 compartment but shall be distributed between at least 2 compartments, one of which shall be above the bulkhead deck.

PART VII—MISCELLANEOUS PROVISIONS

59. Ballasting—In every ship to which this Part of these rules applies, when ballasting with water is necessary, the water ballast shall 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, oily-water separator equipment approved by the Chief Surveyor shall be fitted, or an alternative means approved by the Chief Surveyor shall be provided for disposing of the oily-water ballast.

60. Windows and sidescuttles—(1) All windows and sidescuttles in bulkheads within accommodation and service spaces and control stations shall be constructed so as to preserve the integrity requirements of the type of bulkhead in which they are fitted.

(2) All windows and sidescuttles in the ship's sides and in bulkheads separating accommodation and service spaces and control stations from

the weather shall be constructed with frames of steel or other suitable material. The glass shall be retained by a metal glazing bead or angle.

(3) Special attention shall be given to the fire integrity of windows facing open or enclosed lifeboat and liferaft embarkation areas, and to 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.

61. Anchors and chain cables—Every ship to which this Part of these rules applies 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.

62. Hawsers and warps—Every ship to which this Part of these rules applies shall be provided with such hawsers and warps as are sufficient in number and strength, having regard to the size and intended service of the ship.

63. Means of escape—(1) In every ship to which this Part of these rules applies, stairways and ladderways shall be arranged so as to provide ready means of escape to the lifeboat and liferaft embarkation decks from all crew spaces, passenger spaces, and other spaces in which the crew are normally employed.

(2) In every ship to which this Part of these rules applies, there shall be provided from each engine room, shaft tunnel, and boiler room 2 means of escape as widely separated as practicable, one of which may be a watertight door if such a door is available as a means of escape. Where no such watertight door is available, the 2 means of escape shall consist of 2 sets of steel ladders leading to separate doors in the casing or elsewhere from which there is access to the lifeboat or liferaft embarkation deck or decks. The Chief Surveyor may exempt any such ship of less than 45 m in length from the requirements of this subclause.

(3) In every ship to which this Part of these rules applies, there shall be provided 2 means of escape from each accommodation space or group of spaces bounded by main structural bulkheads, so arranged that a fire within such a space or spaces is unlikely to cut off both means of escape.

64. Guard rails, stanchions, and bulwarks—(1) In every ship to which this Part of these rules applies, bulwarks or guard rails shall be provided on every exposed deck to which any persons may have access. Such bulwarks or guard rails, together with stanchions supporting the guard rails, shall be so placed, designed, and constructed, and in particular shall be of such a height above the deck, as to prevent any person who may have access to that deck from accidentally falling therefrom.

(2) In every open or partially-decked ship to which this Part of these rules applies, every wash-strake, covering board, and coaming shall be so placed, designed, and constructed and in particular shall be of such a height above the floorboards, as to prevent any person from accidentally falling overboard.

65. Equivalents and exemptions—(1) Where these rules require that the hull or machinery of a ship shall be constructed in a particular

manner, or that particular equipment shall be provided, or particular provision shall be made, the Chief Surveyor may allow the hull or machinery of the ship to be constructed in any other manner or any other equipment to be provided or other provision made, if he is satisfied that that other construction or equipment or other provision is at least as effective as that required by these rules.

(2) Notwithstanding anything in this Part of these rules, where it appears to the Director that this Part does not make appropriate or sufficient provision for any ship or class of ship or that compliance with the provisions of this Part in the case of any ship or class of ship would do nothing to promote the safety of passengers (if any) or crew in the event of a fire, damage, or flooding, he may, after consultation with such organisations as appear to him to be representative of the owners of the ship or class of ship and of the crew of the ship or class of ship, prescribe such additional or alternative requirements in respect of the ship or class of ship as seems to him appropriate.

66. Novel forms of construction—Where the proposed construction of any part of the hull or machinery or equipment of any ship to which these rules apply is novel in design or involves the use of unusual material, or where experience, in the opinion of the Director, has not sufficiently justified the principle or mode of application involved, special tests or examinations before and during construction and subsequently in service may be asked for by the Director and any approval of plans and construction, or either, may be conditional on the results of such tests being satisfactory to the Director.

67. Dispensing power of Minister—(1) The Minister may exempt any ship not normally engaged on international voyages, but which in exceptional circumstances is required to undertake a single international voyage, from any of the requirements of these rules, provided it complies with safety requirements which in his opinion are adequate for the voyage which is to be undertaken by the ship.

(2) The Minister may, on such conditions as he thinks fit, exempt any ship from any of the requirements of these rules, if he is satisfied that compliance with that requirement is either impracticable or unreasonable in the case of that ship.

PART VIII—SURVEYS

68. Survey during construction or conversion—(1) The owner of every ship to which these rules apply which is being built or converted in New Zealand for service as a New Zealand ship shall cause the ship to be surveyed during the period of construction or conversion by a Surveyor of Ships.

(2) The owner of every ship to which these rules apply which is being built or converted outside New Zealand for use as a New Zealand ship shall cause the ship to be surveyed during the period of construction or conversion by a Surveyor appointed by a recognised survey authority in the country in which the ship is being built or converted.

(3) Any such Surveyor shall survey the ship and shall satisfy himself that the arrangements, workmanship, materials, and scantlings of the

structure, boilers, and other pressure vessels and their appurtenances, main and auxiliary machinery, electrical installations, and other equipment comply with the requirements of these rules and with the requirements of such other rules relating to safety equipment as may be appropriate and are in all respects satisfactory for the service for which the ship is intended, having regard to the period for which a cargo ship safety construction certificate or certificate of survey, as the case may require, in respect of the ship is to be issued.

(4) The owner shall make available to any such Surveyor for his inspection such test certificates in respect of any items of hull, machinery, and equipment as the Surveyor may require, and shall provide true copies of any such test certificates as the Surveyor may require.

(5) The Surveyor, if satisfied on the survey that he may properly do so, shall forward to the Secretary (in the case of a ship being built or converted within New Zealand) or to the appropriate survey authority (in the case of a ship being built or converted outside New Zealand) survey reports containing such particulars of the ship as are required by the Secretary or the survey authority respectively to enable a cargo ship safety construction certificate or certificate of survey, as appropriate, to be issued.

(6) In the case of a New Zealand ship to which these rules apply built or converted outside New Zealand, the cargo ship safety construction certificate or certificate of survey issued by the survey authority overseas shall, on the ship's first arrival in a New Zealand port, be supplemented by a New Zealand certificate of survey, after such inspection by a Surveyor of Ships as is necessary to ensure that any requirements of rules and regulations made pursuant to the Act which are additional to, or at variance from, the requirements of the rules and regulations under which the cargo ship safety construction certificate or certificate of survey was issued by the survey authority overseas have been complied with.

69. Subsequent surveys—(1) The owner of every New Zealand ship and every other ship engaged in the home trade shall cause the ship to be surveyed once in each year pursuant to the Act.

(2) The surveys (hereafter referred to in these rules as annual surveys) to be carried out under subclause (1) of this rule shall be carried out by a Surveyor or Surveyors in the manner prescribed in rules 70 to 76 of these rules.

70. Extent of annual surveys—(1) At each annual survey, the Surveyor shall examine the hull, machinery, and equipment of the ship to the extent necessary to satisfy himself that they are in good condition, that the principal scantlings and connections are maintained, that the arrangements and details generally are in accordance with the requirements of these rules and of such other rules and regulations as are applicable to the ship, and that the ship is in all respects fit for her intended service.

(2) Subject to subclauses (1), (3), and (4) of this rule and to rules 71 to 76 of these rules, the extent of the survey shall be governed by the age and general condition of the ship and by the judgment of the Surveyor.

(3) In order to maintain a uniform standard of survey throughout New Zealand and to ensure the maintenance and adequate standards of seaworthiness and safety, the Director may from time to time issue such instructions to Surveyors of Ships (hereinafter referred to in these rules as Instructions to Surveyors) as he considers necessary, relating to—

(a) Detailed requirements concerning the periodic examination and testing of all parts of the hull, machinery, and equipment of ships:

(b) Interpretations of the Act and rules made pursuant to the Act:

(c) Detailed requirements for the carriage of miscellaneous items of safety equipment or navigation equipment not provided for in any other rules made pursuant to the Act:

(d) Any other matters in connection with the annual or periodic survey of ships as he deems relevant.

(4) Instructions to Surveyors may be added to or amended by the Director from time to time. The Instructions to Surveyors may be of a confidential nature or, at the discretion of the Director, may be made available to such persons or organisations representing maritime interests as he thinks desirable or necessary.

(5) A Surveyor may, at any annual survey, extend the scope of his examination of any part or parts of a ship's hull, machinery, or equipment, where he has reason to suspect the existence of a defect which would render the ship unseaworthy, or where a defect in a part exposed indicates that further exposure may reveal additional defects.

(6) Where any alterations have been made to a ship's hull, machinery, or equipment since the previous survey which might affect the main or local structural strength or seaworthiness, those alterations shall be drawn to the attention of the Surveyor by the owner or his agent.

71. Survey of hull externally—(1) The hull shall be examined in dry dock at such intervals as the Director may from time to time prescribe. The hull shall be examined after it has been cleaned and before it is painted. All parts of the rudders, propellers, and the ends of propeller shafts, where visible, are to be inspected.

(2) At each annual survey, all openings in the ship's sides and bottom which are situated below the bulkhead deck, including sidescuttles, ash shoots, valves, and other appliances and their fastenings intended to prevent the accidental admission of water into the ship, are to be examined:

Provided that, on the application of the owner and with the approval of the Chief Surveyor, the complete opening up or withdrawal of valves, cocks, and other skin fittings may be spread over a period of not more than 5 years, so that each valve, cock, or other skin fitting is thoroughly examined once in each 5 years and an approved proportion of those valves, cocks, and other skin fittings is opened up or withdrawn for examination at each survey.

(3) In the case of wooden ships, the Surveyor may require the removal of metal sheathing to the extent considered necessary by him in order to determine the condition of the hull planking and the withdrawal of selected through fastenings to ascertain their condition.

(4) In the case of steel ships, the hull plating shall be periodically tested by drilling or other means approved by the Chief Surveyor:

Provided that the Surveyor may require portions of the hull to be tested at any other time if in his opinion the hull plating shows signs of excessive wastage.

(5) Load line markings shall be checked at each annual survey to ensure that they are in accordance with those assigned and with the current load-line certificate.

(6) The examination of the external hull and fittings referred to in subclauses (1) to (4) of this rule shall be carried out during the hours of daylight, but in exceptional circumstances the examination may be carried out during the hours of darkness if adequate artificial lighting is provided to the satisfaction of the Surveyor.

72. Survey of hull internally—(1) At each annual survey, the cargo holds (if any) shall be cleared of cargo and the internal structure examined by a Surveyor to determine its condition. Where necessary such linings, ceilings, or insulation as directed by the Surveyor shall be removed to enable him to determine the condition of the structure.

(2) Double-bottom tanks, peak tanks, and other tanks, including oil-fuel tanks, are to be cleaned out and examined and tested at such intervals as may be prescribed by the Director in the Instructions to Surveyors.

(3) At each annual survey, the condition of watertight bulkheads, shaft tunnels, tank tops, and decks shall be examined by a Surveyor, who shall satisfy himself that all subdivision arrangements and details, including piping, valves, and other fittings which affect those arrangements, are in good order.

(4) At each annual survey, the Surveyor shall inspect and test the operation of all watertight doors and other means of closing openings in watertight bulkheads.

(5) At each annual survey, the Surveyor shall examine all superstructures, deckhouses, deck erections, machinery casings, mast houses, and similar structures to the extent necessary to satisfy himself that they are in good condition, and that all sidescuttles, windows, doors, and other openings in such structures are in good condition, and such linings, ceilings, or deck coverings as the Surveyor directs are to be removed to enable him to determine the condition of the structure and its connections.

73. Survey of machinery—(1) At each annual survey the main and auxiliary machinery, including boilers, pressure vessels, pumps and piping, deck machinery, steering gear, and shafting, and electrical installation, shall be examined, and, when necessary, tested.

(2) At the completion of annual survey, all parts of the main and auxiliary machinery shall be operated to the satisfaction of a Surveyor, and in particular the main steering gear, bilge pumping arrangements, and engine room telegraphs are to be tested to his satisfaction.

(3) Boiler safety valves shall be set to the approved safe-working pressure and tested under steam at each annual survey.

74. Survey of other parts of hull, machinery, and equipment—(1) At each annual survey, the Surveyor shall examine all other parts of the hull, machinery, and equipment of the ship in the manner prescribed by the Director in the Instructions to Surveyors.

(2) At each annual survey, the cargo gear (if any) shall be examined and tested in accordance with the requirements of the General Harbour (Ship, Cargo, and Dock Safety) Regulations 1968* and the General Harbour (Safe Working Loads) Regulations 1935†.

(3) At each annual survey, the safety equipment, including fire appliances, lifesaving appliances, radio installation, and other safety equipment prescribed by the appropriate rules and regulations made pursuant to the Act, shall be inspected and tested in the manner prescribed in the Instructions to Surveyors.

(4) At each annual survey such certificates or documents as are required in accordance with the provisions of the Act or of any regulations made pursuant to the Act shall be produced for examination and, where necessary, endorsement by a Surveyor.

75. Continuous survey of hull, machinery, and equipment—(1) On the application of the owner and with the approval of the Chief Surveyor, the periodic examination and testing of certain parts of a ship's hull, machinery, and equipment may be carried out as a continuous survey cycle extending over a period not exceeding 5 years, so that every part of the hull, machinery, and equipment is examined, and when necessary tested, at least once in each 5-year period.

(2) Those parts of the hull, machinery, and equipment whose examination and testing are carried out in accordance with subclause (1) of this rule shall be specified in a "record of continuous survey" approved by a Surveyor, and the periodic examination and testing of these parts shall, subject to subclause (5) of rule 70 of these rules, be carried out in accordance with that subclause.

76. Completion of survey—(1) At the completion of each annual survey, the Surveyor shall, if he is satisfied that he can with propriety do so, complete a declaration of survey in a form approved by the Minister and deliver it to the owner or agent in the manner prescribed in the Act.

(2) All defects and deficiencies in the hull, machinery, or equipment shall be remedied to the satisfaction of the Surveyor, and any repairs or renewals to the hull, machinery, or equipment shall be to the satisfaction of a Surveyor before the completion of a declaration of survey.

(3) At the completion of each annual survey, if the Surveyor is not satisfied that he can with propriety complete a declaration of survey he shall notify the owner or his agent accordingly in the manner prescribed in the Act.

(4) The owner or his agent shall, on receipt of a declaration of survey, complete the particulars required thereon and return it to the office of

*S.R. 1968/240
Amendment No. 1: S.R. 1972/190
†*Gazette*, 1935, Vol. II, p. 1863 (Reprinted with Amendment No. 1: S.R. 1954/134)
Amendment No. 2: S.R. 1961/68
Amendment No. 3: S.R. 1962/132
Amendment No. 4: S.R. 1967/131
Amendment No. 5: S.R. 1970/174

the Ministry of Transport nominated thereon in the manner prescribed in the Act.

(5) On receipt of a declaration of survey duly completed in all respects the Minister shall, if satisfied that the relevant provisions of the Act have been complied with, issue a certificate of survey in the manner prescribed in the Act.

PART IX—REVOCATION

77. Revocation—The Regulations and Instructions relating to the Survey of Iron and Steel Cargo Vessels made by the Minister of Marine on the 28th day of September 1931* are hereby revoked.

P. G. MILLEN,
Clerk of the Executive Council.

*Not gazetted.

EXPLANATORY NOTE

This note is not part of the rules, but is intended to indicate their general effect.

These rules contain provisions relating to the hull, equipment, and machinery of cargo and other non-passenger ships, and in particular to the watertight doors, bilge pumping arrangements, electrical equipment, fire protection, and boilers and machinery of such ships.

The rules prescribe that such ships shall be surveyed at regular intervals, and contain provisions as to the manner in which such surveys shall be carried out.

They also include such requirements as are necessary to implement the provisions of the International Convention for the Safety of Life at Sea 1960 and of Attachment I to the Final Act of the International Conference on Safety of Life at Sea 1974, relating to the construction and survey of cargo ships.

Issued under the authority of the Regulations Act 1936.
Date of notification in *Gazette*: 2 December 1976.
These rules are administered in the Ministry of Transport.