

1985 No. 1194

MERCHANT SHIPPING

SAFETY

The Merchant Shipping (Fire Appliances) (Amendment) Regulations 1985*Laid before Parliament in draft**Made - - - - - 29th July 1985**Coming into Operation - - 12th August 1985*

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

1. These Regulations may be cited as the Merchant Shipping (Fire Appliances) (Amendment) Regulations 1985 and shall come into operation two weeks after they are made.

2. The Merchant Shipping (Fire Appliances—Application to Other Ships) Rules 1980(b) and the Merchant Shipping (Fire Appliances) (Amendment) Regulations 1984(c) are hereby revoked.

3. The Merchant Shipping (Fire Appliances) Regulations 1980(d) shall be further amended in accordance with the following regulations.

4. Regulation 1(2) (interpretation) shall be amended as follows:

(a) after the definition of “Bulkhead deck” the following definition shall be inserted:

“ “Cargo ship” means any ship which is not a passenger ship;”;

(b) the following shall be substituted for the definition of “Fishing vessel”:

(a) 1979 c.39; section 21(6) was amended by section 49(3) of the Criminal Justice Act 1982 (c.48).

(b) S.I. 1980/687.

(c) S.I. 1984/1221.

(d) S.I. 1980/544; relevant amendment is S.I. 1984/1221.

“ “Fishing vessel” means a vessel used for catching fish, whales, seals, walrus or other living resources of the sea;”;

- (c) after the definition of “Gas safe space” the following definition shall be inserted:

“ “Guidelines for Inert Gas Systems” (MSC Circ. 353) forms part of the publication “Inert Gas Systems”, 1983 Edition, published by the International Maritime Organization and any reference to such publication in these Regulations shall include a reference to any document amending that publication which is considered by the Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice;”.

5. For paragraph (3) of regulation 1 (application) there shall be substituted the following paragraph:

- “(3) (a) Subject to sub-paragraph (b) below, these Regulations shall apply in relation to new United Kingdom ships wherever they may be and to other new ships while they are within the United Kingdom or the territorial waters thereof, except those the keels of which were laid or which were at a similar stage of construction on or after 1st September 1984;
- (b) these Regulations shall not apply to:
- (i) fishing vessels;
 - (ii) pleasure craft which are not passenger ships and are of less than 13.7 metres in length;
 - (iii) the following non-United Kingdom ships:
 - (A) cargo ships of less than 500 tons;
 - (B) troopships;
 - (C) ships not propelled by mechanical means;
 - (D) pleasure craft of 13.7 metres in length or more, which are not passenger ships;
 - (E) a ship by reason of her being within the United Kingdom or the territorial waters thereof if she would not have been therein but for stress of weather or any other circumstance that neither the master nor the owner nor the charterer (if any) could have prevented;
- (c) for the purposes of this regulation “similar stage of construction” means a stage at which:
- (i) construction identifiable with a particular ship began; and
 - (ii) assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material whichever is the less.”.

6. Regulation 1(4) shall be deleted.

7. In regulation 2(1) (Classification of ships):

- (a) the description of Class VI(A) shall be replaced by the following description:

“Class VI(A). Passenger ships in respect of which there is or should be in force a certificate entitled “Passenger Certificate Class VI(A)” being a certificate for ships carrying not more than 50 passengers for a distance of not more than 6 miles on voyages to or from isolated communities on the islands or coast of the United Kingdom and which do not proceed for a distance of more than 3 miles from land, subject to any conditions which the Secretary of State may impose.”;

- (b) in the descriptions of Classes VII, VIII and VIII(A) the figure “X” shall be deleted;
- (c) the entry for Class X shall be deleted; and
- (d) in the descriptions of Class XI the words “fishing boats and” shall be deleted.

8. In regulation 39(3) (Firemen’s outfits) for the words “2000 tons or over fitted with a deck foam system in compliance with regulation 52 of these Regulations” there shall be substituted the words “500 tons or over”.

9. For regulation 42 the following shall be substituted:

“**42.**—(1) Regulations 31 to 40 inclusive of these Regulations shall apply to every ship of Class VII(A) of 500 tons or over as they apply to ships of Class VII of 500 tons or over.

(2) Every ship of Class VII(A) of less than 500 tons shall, if not subject to the Fishing Vessels (Safety Provisions) Rules 1975(a), carry the fire appliances appropriate to its length which are required to be carried by vessels of that length which are subject to those Rules.”.

10. In regulation 46:

- (a) the words “Subject to regulation 1(4) of these Regulations” shall be deleted;
- (b) after the word “adapted” there shall be inserted the words “and used”; and
- (c) at the end the following paragraph shall be added:

“(2) Combination carriers shall not carry solid cargoes unless all cargo tanks are empty of crude oil and other petroleum products having a closed flash point not exceeding 60°C and other liquids having a similar fire hazard and are gas freed or unless the arrangements provided in each case are in accordance with the relevant operational requirements contained in the “Guidelines for Inert Gas Systems” and are to the satisfaction of the Secretary of State.”.

11. For regulation 47 the following regulation shall be substituted:

(a) S.I. 1975/330, to which there are amendments not relevant to these Regulations.

“47. Notwithstanding the provisions of regulation 46 every tanker of Class VII(T) operating with a tank cleaning procedure using crude oil washing shall be:

- (a) fitted with an inert gas system complying with regulation 51 of these Regulations; and
- (b) provided with fixed tank washing machines only.”.

12. For regulation 51 there shall be substituted the following:

“51.—(1) Every fixed inert gas system fitted in accordance with these Regulations shall comply with the requirements of paragraph (2) of this regulation except that inert gas systems fitted before 1st June 1981 shall not be required to comply with paragraph (2)(h), (i)(ii), (j)(ii), (j)(vii), (j)(ix), (k)(iii), (k)(iv), (m)(iii)(B), and (s)(viii).

- (2)(a) (i) The inert gas system shall be designed, constructed and tested to the satisfaction of the Secretary of State. It shall be so designed and operated as to render and maintain the atmosphere of the cargo tanks including the slop tanks non-flammable at all times, except where it is necessary for such tanks to be gas free;
- (ii) in the event that the inert gas system is unable to meet the operational requirement set out above and it has been assessed by the owner or master that it is impractical to effect a repair, then cargo discharge, deballasting and necessary tank cleaning shall only be resumed when the “emergency procedures” laid down in the “Guidelines for Inert Gas Systems” are complied with;
- (b) the system shall be capable of:
 - (i) 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;
 - (ii) maintaining the atmosphere in any part of any cargo or slop tank at an oxygen content not exceeding 8 per cent 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;
 - (iii) 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; and
 - (iv) purging empty cargo tanks including slop tanks of hydrocarbon vapour, so that subsequent gas freeing operations will at no time create a flammable atmosphere within the tank;
- (c) (i) the system shall be capable of delivering inert gas to the cargo tanks and slop tanks at a rate of at least 125 per cent of the maximum rate of discharge capacity of the ship, expressed as a volume;
- (ii) the oxygen content of the inert gas main shall not normally exceed 5 per cent by volume;
- (d) 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 Secretary of State

may approve systems using inert gases other than flue gas, provided he is satisfied that an equivalent standard of safety is achieved. Systems using stored carbon dioxide shall not be permitted unless the Secretary of State is satisfied that the risk of ignition from generation of static electricity by the system itself is minimised;

- (e) 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 gas-tight and keep the seating clear of soot. Arrangements shall be made so that boiler soot blowers cannot be operated when the corresponding flue gas valve is open;
- (f)
 - (i) a flue gas scrubber shall be fitted which will effectively cool the volume of gas specified in sub-paragraph (c) above 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 be made for an alternative supply of cooling water;
 - (ii) filters or equivalent devices shall be fitted to minimise the amount of water carried over to the inert gas blowers;
- (g)
 - (i) 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 sub-paragraph (c) above. In a system provided with a gas generator, the Secretary of State may permit only one blower if that system is capable of delivering the total volume of gas required by sub-paragraph (c) to the protected cargo tanks, on condition that sufficient spares and replacement parts 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;
 - (ii) two fuel oil pumps shall be fitted to the inert gas generator. The Secretary of State may permit only one fuel oil pump on condition that sufficient spares and replacement parts 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;
 - (iii) 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 stabilised before commencing cargo discharge. If the blowers are to be used for gas freeing, their air inlets shall be provided with blanking arrangements;
- (h)
 - (i) 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;
 - (ii) 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;

- (i) (i) a gas regulating valve shall be fitted in the inert gas supply main. Such valve shall be automatically controlled to close as required in sub-paragraph (s)(iii) and (s)(iv) below, and shall also be capable of automatically regulating the flow of inert gas to the cargo tanks unless means are provided for automatically controlling the speed of the inert gas blowers required in sub-paragraph (g) above;
- (ii) the valve referred to in sub-sub-paragraph (i) above shall be located at the forward bulkhead of the most forward gas safe space through which the inert gas supply main passes;
- (j) (i) 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 sub-paragraph (i) above and the aftermost connection to any cargo tank or cargo pipeline;
- (ii) the devices referred to in this paragraph shall be located in the cargo area on deck;
- (iii) the water seal referred to in sub-sub-paragraph (i) above shall be capable of being supplied by two separate pumps, each of which shall be capable of maintaining an adequate supply at all times;
- (iv) 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;
- (v) 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;
- (vi) a water loop or other arrangement approved by the Secretary of State shall also be fitted to all associated water supply and drain 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;
- (vii) 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;
- (viii) the second non-return device referred to in sub-sub-paragraph (i) above 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-sub-paragraph (i) above. 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;

- (ix) 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-sub-paragraph (viii) above and the valve referred to in sub-paragraph (i) above to be vented in a safe manner when the first of these valves is closed;
- (k) (i) the inert gas main may be divided into two or more branches forward of the non-return devices required by sub-paragraph (j) above;
- (ii) (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 for Inert Gas Systems";
- (iii) means shall be provided to protect cargo tanks and slop tanks against the effect of over-pressure or vacuum caused by thermal variations when such tanks are isolated from the inert gas main;
- (iv) piping systems shall be so designed as to prevent the accumulation of cargo or water in the pipelines under all normal conditions;
- (v) suitable arrangements shall be provided to enable the inert gas main to be connected to an external supply of inert gas;
- (l) the arrangements for the venting of all vapours displaced from the cargo tanks during loading or ballasting shall comply with regulation 70(3) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1981(a) 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;
- (m) the arrangements for inerting, purging or gas freeing of empty tanks as required in sub-paragraph (b) above shall be approved by the Secretary of State and shall be such that the accumulation of hydrocarbon vapours in pockets formed by the internal structural members in a tank is minimised and that:
 - (i) in 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 regulation 70(3) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1981. 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;

(a) S.I. 1981/572, to which there is an amendment not relevant to these Regulations.

- (ii) each gas outlet referred to in sub-sub-paragraph (i) above shall be fitted with suitable blanking arrangements;
- (iii) (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; and
(B) the valve separating the inert gas supply main from the cargo main and which is on the cargo main side shall be a non-return valve with a positive means of closure;
- (n) (i) 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 as set out in regulation 12 of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1984(a) or on individual cargo tanks;
- (ii) the location and design of the devices referred to above shall be in accordance with regulation 70(3) of the Merchant Shipping (Cargo Ship Construction and Survey) Regulations 1981;
- (o) 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;
- (p) (i) 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-paragraph (j)(i) above; and
 - (B) the oxygen content of the inert gas in the inert gas supply main on the discharge side of the gas blowers;(ii) the devices referred to in sub-sub-paragraph (i) above 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;
- (iii) in addition, meters shall be fitted:
 - (A) in the navigating bridge, to indicate at all times the

(a) S.I. 1984/1217, to which there is an amendment not relevant to these Regulations.

pressure referred to in sub-sub-paragraph (i)(A) above 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-sub-paragraph (i)(B) above;

- (q) 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;
- (r) suitable means shall be provided for the zero and span calibration of both fixed and portable gas concentration measurement instruments, referred to in sub-paragraphs (p) and (q) above;
- (s) (i) 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-paragraph (f)(i) above;
 - (B) high water level in the flue gas scrubber referred to in sub-paragraph (f)(i) above;
 - (C) high gas temperature referred to in sub-paragraph (o) above;
 - (D) failure of any of the inert gas blowers referred to in sub-paragraph (g) above;
 - (E) oxygen content referred to in sub-sub-paragraph (p)(i)(B) above in excess of 8 per cent by volume;
 - (F) failure of the power supply to the automatic control system for the gas regulating valve and to the indicating devices referred to in sub-paragraphs (i) and (p)(i) respectively above;
 - (G) low water level in the water seal referred to in sub-paragraph (j)(i) above;
 - (H) gas pressure as referred to in sub-paragraph (p)(i)(A) above less than 100 millimetres water gauge; 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-paragraph (p)(i)(A) above;
- (ii) in systems fitted with gas generators, audible and visual alarms shall be provided in accordance with sub-sub-paragraphs (i)(A), (i)(C) and (i)(E) to (i)(I) above 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;

- (iii) automatic shut down of the inert gas blowers and gas regulating valve shall be arranged to operate on system design limits being reached in respect of sub-sub-paragraph (i)(A), (B) and (C) above;
- (iv) automatic shut down of the gas regulating valve shall be arranged to operate on failure of the inert gas blowers referred to in sub-paragraph (g) above;
- (v) in relation to sub-sub-paragraph (i)(E) above, when the oxygen content of the inert gas exceeds 8 per cent, 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-paragraph (j)(viii) above shall be closed;
- (vi) the alarms required in sub-sub-paragraphs (i)(E), (i)(F) and (i)(H) above 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;
- (vii) in relation to the water seal referred to in sub-sub-paragraph (s)(i)(G) above, arrangements shall be made to the satisfaction of the Secretary of State for the maintenance of an adequate reserve of water at all times for the automatic formation of the water seal when the gas flow ceases. The audible and visual alarm on the low level of the water in the water seal shall operate when the inert gas is not being supplied;
- (viii) an audible alarm system independent of that required in sub-sub-paragraph (i)(H), or automatic shut down of cargo pumps, shall be arranged to operate on the system designed limit of low pressure in the inert gas main being reached;
- (t) a detailed instruction manual shall be provided on board by the owner which shall contain the operational safety and maintenance requirements and occupational health hazards relevant to the inert gas system and its application to the cargo tank system. In addition the manual shall include guidance on procedures to be followed in the event of a fault or failure of the inert gas system as detailed in the "Guidelines for Inert Gas Systems";
- (u) all tankers fitted with a fixed inert gas system in accordance with this regulation shall be provided with a closed ullage system."

13. In regulation 60:

- (a) at the beginning of paragraph (1) there shall be inserted the following words "Subject to paragraph (1A) of this regulation"; and
- (b) there shall be inserted the following as a new paragraph (1A):

"(1A) Every tanker of 2,000 tons or over of any of the Classes specified in paragraph (1) of this regulation fitted with a deck foam system in compliance with regulation 52 shall be provided with not less than four firemen's outfits complying with the requirements of regulation 71. Such outfits shall not be required to be provided in addition to those required by paragraph (1) of regulation 39."

14. Regulation 61 shall be deleted.

15. In regulation 68(3) for “Classes X and XII” there shall be substituted “Class XII”.

16. In regulation 73 (Fire control plans) after paragraph (4) there shall be added:—

“(5) Instructions concerning the maintenance and operation of all the equipment and installations on board for the fighting and containment of fire shall be kept in one book, readily available in an accessible position.”.

Nicholas Ridley,
Secretary of State for Transport.

29th July 1985.

EXPLANATORY NOTE

(This Note is not part of the Regulations.)

These Regulations apply to non-United Kingdom ships built or converted between 25th May 1980 and 31st August 1984 the requirements (which already apply to such United Kingdom ships) governing fire protection in the Amendments to the International Convention for the Safety of Life at Sea, 1974 (SOLAS) adopted on 20th November 1981 by the Maritime Safety Committee of the International Maritime Organization at its 45th Session.

The Regulations further amend the Merchant Shipping (Fire Appliances) Regulations 1980 ("the 1980 Regulations"). They disapply the 1980 Regulations also from non-United Kingdom ships built on or after 1st September 1984. (Such ships are made subject to the Merchant Shipping (Fire Protection) Regulations 1984 (S.I. 1984/1218) by the Merchant Shipping (Fire Protection) (Amendment) Regulations 1985 (S.I. 1985/1193).)

The principal amendments are additional requirements for inert gas systems applicable to specified tankers contained in the re-enactment of regulations 47 and 51 of the 1980 Regulations (regulations 11 and 12) and additional requirements for firemen's outfits and fire control plans (regulations 13 and 16).

Regulation 2 revokes the Merchant Shipping (Fire Appliances) (Amendment) Regulations 1984 which applied only to United Kingdom ships and the Merchant Shipping (Fire Appliances—Application to Other Ships) Rules 1980 which applied only to certain non-United Kingdom tankers.

The IMO Amendments are contained in the IMO Publication "Amendments to the International Convention for the Safety of Life at Sea, 1974" (Sales number 092 82.01.E). IMO publications can be obtained from IMO, 4 Albert Embankment, London SE1 7SR.

SI 1985/1194
ISBN 0-11-057194-0

