JABATAN LAUT MALAYSIA
MARINE DEPARTMENT MALAYSIA

MALAYSIAN SHIPPING NOTICE

Marine Department HQ, Peninsular Malaysia, PO. Box 12, 42007 Port Klang, Malaysia.
Tel: 03 33467777 Fax: 03 31685020 E-mail: kpgr@marine.gov.my Web site: http://www.marine.gov.my

Notis kepada pemilik kapal serta orang yang mempunyai kepentingan kepada kebenaran pengeluaran sijil-sijil statutory.
Notice to ship owners and persons with interest toward the delegation of statutory certification.

IMPLEMENTATION OF THE LOAD LINES, 1966 – INTERNATIONAL CONVENTION ON LOAD LINES,

1. International Convention On Load Lines 1966 came into effect for Malaysia since 12th April 1971. The enforcement of the Load Lines Convention for Malaysia is done by way of the Merchant Shipping Ordinance 1952.

2. Pursuant to the above, the detail requirements and standards for the implementation of the Load Line Convention for Malaysian Ship as attached in **Appendix 1**

3. This notice is applicable throughout Malaysia and to all Malaysian ships and all ships while in Malaysian waters.

Ketua Pengarah Laut/ *Director General of Marine*
Tarikh/*Date*: 24 DECEMBER 2008

Appendix 1

Load Lines, 1966 - International Convention on Load Lines, 1966

Annex I - Regulations for Determining Load Lines

Chapter I - General

The Regulations assume that the nature and stowage of the cargo, ballast, etc., are such as to secure sufficient stability of the ship and the avoidance of excessive structural stress.

The Regulations also assume that where there are international requirements relating to stability or subdivision, these requirements have been complied with

Regulation 1 - *Strength of Hull*

The Surveyor General shall satisfy itself that the general structural strength of the hull is sufficient for the draught corresponding to the freeboard assigned. Ships built and maintained in conformity with the requirements of a classification society recognized by the Surveyor General may be considered to possess adequate strength

Regulation 2 - *Application*

(1). Ships with mechanical means of propulsion or lighters, barges or other ships without independent means of propulsion, shall be assigned freeboards in accordance with the provisions of Regulations 1-40 inclusive of this Annex.

(2). Ships carrying timber deck cargoes may be assigned, in addition to the freeboards prescribed in paragraph (1) of this Regulation, timber freeboards in accordance with the provisions of Regulations 41-45 inclusive of this Annex.

(3). Ships designed to carry sail, whether as the sole means of propulsion or as a supplementary means, and tugs, shall be assigned freeboards in accordance with the provisions of Regulations 1-40 inclusive of this Annex. Such additional freeboard shall be required as determined by the Surveyor General.

(4). Ships of wood or of composite construction, or of other materials the use of which the Surveyor General has approved, or ships whose constructional features are such as to render the application of the provisions of this Annex unreasonable or impracticable, shall be assigned freeboards as determined by the Surveyor General.

(5). Regulations 10-26 inclusive of this Annex shall apply to every ship to which a minimum freeboard is assigned. Relaxations from these requirements may be granted to a ship to which a greater than minimum freeboard is assigned on condition that the Surveyor General is satisfied with the safety conditions provided

Regulation 3 - *Definitions of Terms used in the Annexes*

(1). *Length.* The length (L) shall be taken as 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the top of the keel, or as the length from the fore side of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline.

(2). *Perpendiculars.* The forward and after perpendiculars shall be taken at the forward and after ends of the length (L). The forward perpendicular shall coincide with the foreside of the stem on the waterline on which the length is measured.

(3). *Amidships.* Amidships is at the middle of the length (L).

(4). *Breadth.* Unless expressly provided otherwise, the breadth (B) is the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material.

(5). *Moulded Depth*

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

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

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

(6). *Depth for Freeboard (D)*

(a). The depth for freeboard (D) is the moulded depth amidships, plus the thickness of the freeboard deck stringer plate, where fitted, plus

$$\frac{\mathbf{T\,(L-S)}}{\mathbf{L}}$$

if the exposed freeboard deck is sheathed,

where

T is the mean thickness of the exposed sheathing clear of deck openings, and

S is the total length of superstructures as defined in sub-paragraph (10) (d) of this Regulation.

(b). The depth for freeboard (D) in a ship having a rounded gunwale with a radius greater than 4 per cent of the breadth (B) or having topsides of unusual form is the depth for freeboard of a ship having a midship section with vertical topsides and with the same round of beam and area of topside section equal to that provided by the actual midship section.

(7). *Block Coefficient.* The block coefficient (C_b) is given by:

$$\mathbf{Cb} = \frac{\mathbf{V}}{\mathbf{L.B.\,d_1}}$$

Where

V is the volume of the moulded displacement of the ship, excluding bossing, in a ship with a metal shell, and is the volume of displacement to the outer surface of the hull in a ship with a shell of any other material, both taken at a moulded draught of d_1; and where

d_1 is 85 per cent of the least moulded depth.

(8). *Freeboard.* The freeboard assigned is the distance measured vertically downwards amidships from the upper edge of the deck line to the upper edge of the related load line.

(9). *Freeboard Deck.* The freeboard deck is normally the uppermost complete deck exposed to weather and sea, which has permanent means of closing all openings in the weather part thereof, and below which all openings in the sides of the ship are fitted with permanent means of watertight closing. In a ship having a discontinuous freeboard deck, the lowest line of the exposed deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck. At the option of the owner and subject to the approval of the Surveyor General, a lower deck may be designated as the freeboard deck provided it is a complete and permanent deck continuous in a fore and aft direction at least between the machinery space and peak bulkheads and continuous athwartships. When this lower deck is stepped the lowest line of the deck and the continuation of that line parallel to the upper part of the deck is taken as the freeboard deck. When a lower deck is designated as the freeboard deck, that part of the hull which extends above the freeboard deck is treated as a superstructure so far as concerns the application of the conditions of assignment and the calculation of freeboard. It is from this deck that the freeboard is calculated.

(10). *Superstructure*

(a). A superstructure is a decked structure on the freeboard deck, extending from side to side of the ship or with the side plating not being inboard of the shell plating more than 4 per cent of the breadth (B). A raised quarter deck is regarded as a superstructure.

(b). An enclosed superstructure is a superstructure with:

(i). enclosing bulkheads of efficient construction;

(ii). access openings, if any, in these bulkheads fitted with doors complying with the requirements of Regulation 12;

(iii). all other openings in sides or ends of the superstructure fitted with efficient weathertight means of closing.

A bridge or poop shall not be regarded as enclosed unless access is provided for the crew to reach machinery and other working spaces inside these superstructures by alternative means which are available at all times when bulkhead openings are closed.

(c). The height of a superstructure is the least vertical height measured at side from the top of the superstructure deck beams to the top of the freeboard deck beams.

(d). The length of a superstructure (S) is the mean length of the part of the superstructure which lies within the length (L).

(11). *Flush Deck Ship.* A flush deck ship is one which has no superstructure on the freeboard deck.

(12). *Weathertight.* Weathertight means that in any sea conditions water will not penetrate into the ship

Regulation 4 - *Deck Line*

The deck line is a horizontal line 300 millimetres (12 inches) in length and 25 millimetres (1 inch) in breadth. It shall be marked amidships on each side of the ship, and its upper edge shall normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell (as illustrated in Figure 1), provided that the deck line may be placed with reference to another fixed point on the ship on condition that the freeboard is correspondingly corrected. The location of the reference point and the identification of the freeboard deck shall in all cases be indicated on the International Load Line Certificate (1966).

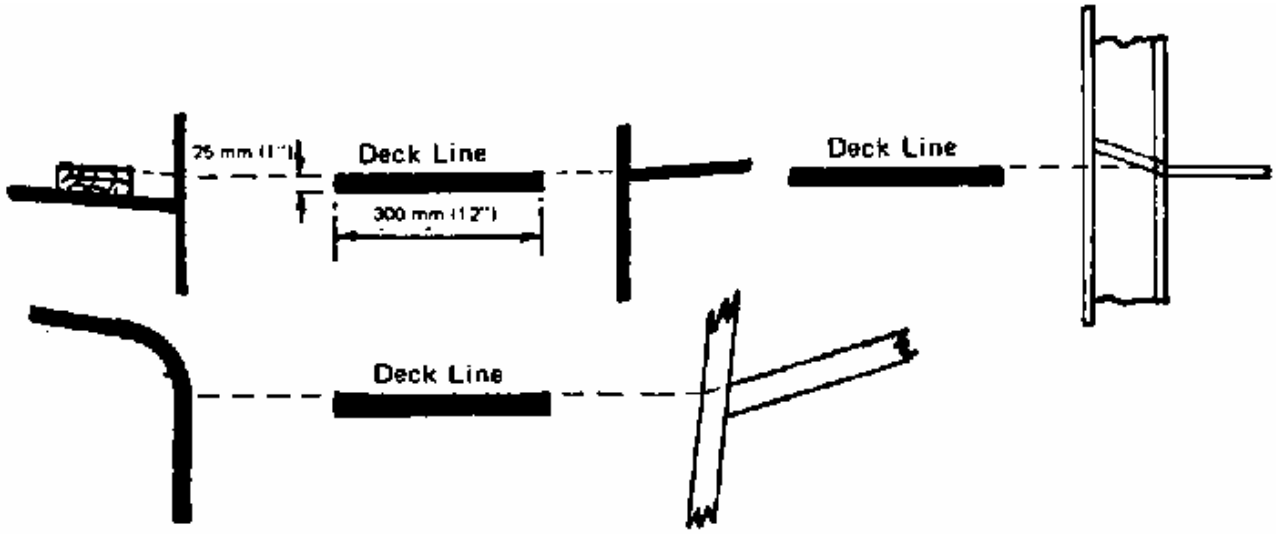

Fig. 1. Deck Line

Regulation 5 - *Load Line Mark*

The Load Line Mark shall consist of a ring 300 millimetres (12 inches) in outside diameter and 25 millimetres (1 inch) wide which is intersected by a horizontal line 450 millimetres (18 inches) in length and 25 millimetres (1 inch) in breadth, the upper edge of which passes through the centre of the ring. The centre of the ring shall be placed amidships and at a distance equal to the assigned summer freeboard measured vertically below the upper edge of the deck line (as illustrated in Figure 2).

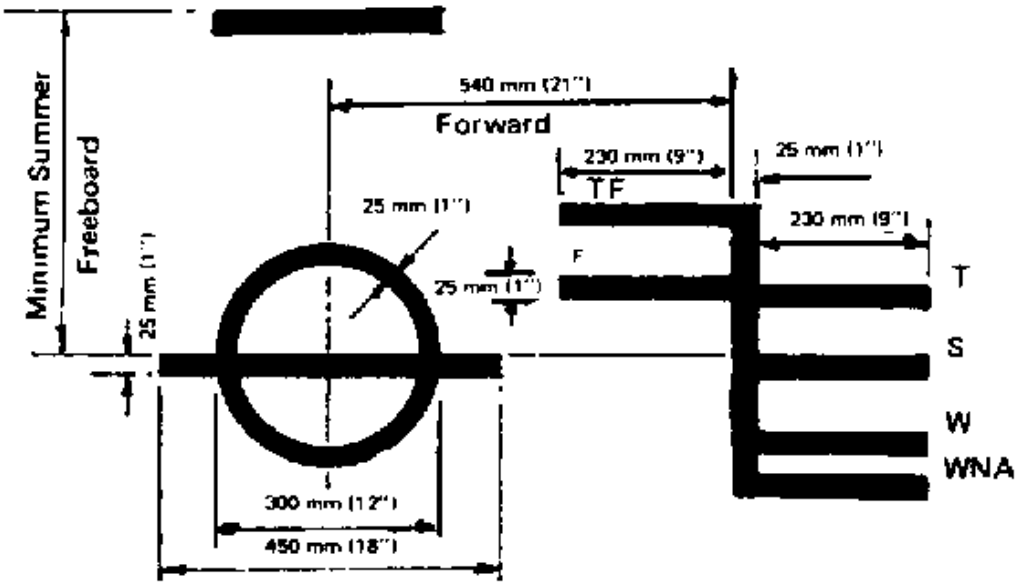

Fig. 2. Load Line Mark and lines to be used with this mark

Regulation 6 - *Lines to be used with the Load Line Mark*

(1). The lines which indicate the load line assigned in accordance with these Regulations shall be horizontal lines 230 millimetres (9 inches) in length and 25 millimetres (1 inch) in breadth which extend forward of, unless expressly provided otherwise, and at right angles to, a vertical line 25 millimetres (1 inch) in breadth marked at a distance 540 millimetres (21 inches) forward of the centre of the ring (as illustrated in Figure 2).

(2). The following load lines shall be used:

(a). The Summer Load Line indicated by the upper edge of the line which passes through the centre of the ring and also by a line marked S.

(b). The Winter Load Line indicated by the upper edge of a line marked W.

(c). The Winter North Atlantic Load Line indicated by the upper edge of a line marked WNA.

(d). The Tropical Load Line indicated by the upper edge of a line marked T.

(e). The Fresh Water Load Line in summer indicated by the upper edge of a line marked F. The Fresh Water Load Line in summer is marked abaft the vertical line. The difference between the Fresh Water Load Line in summer and the Summer Load Line is the allowance to be made for loading in fresh water at the other load lines.

(f). The Tropical Fresh Water Load Line indicated by the upper edge of a line marked TF, and marked abaft the vertical line.

(3). If timber freeboards are assigned in accordance with these Regulations, the timber load lines shall be marked in addition to ordinary load lines. These lines shall be horizontal lines 230 millimetres (9 inches) in length and 25 millimetres (1 inch) in breadth which extend abaft unless expressly provided otherwise, and are at right angles to, a vertical line 25 millimetres (1 inch) in

breadth marked at a distance 540 millimetres (21 inches) abaft the centre of the ring (as illustrated in Figure 3).

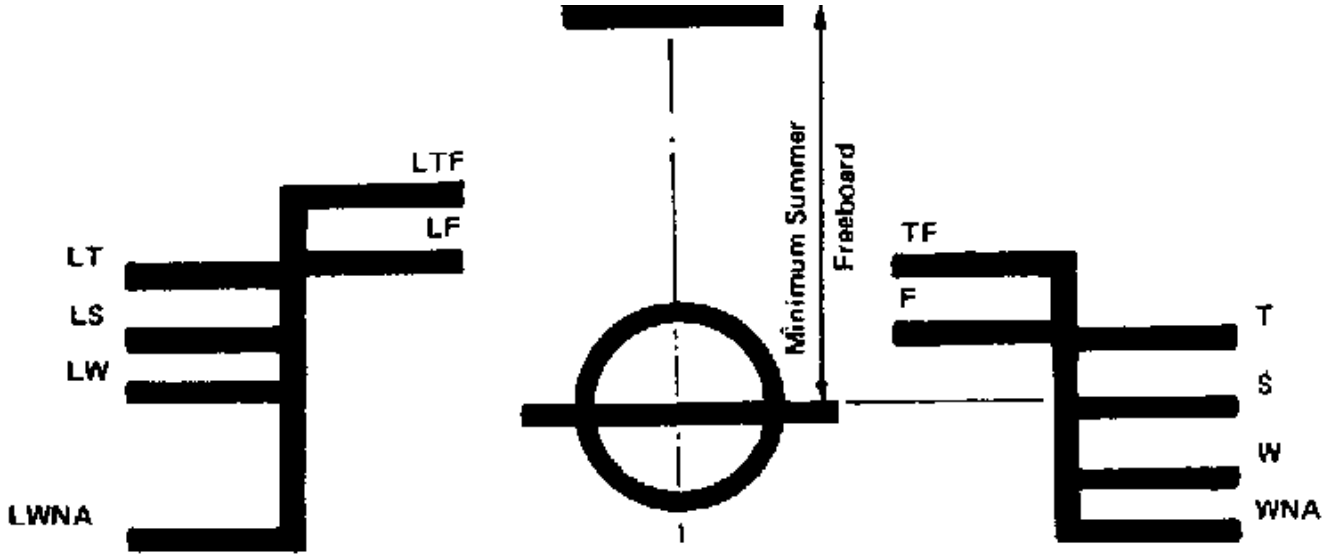

Fig. 3. Timber Load Line Mark and lines to be used with this mark

(4). The following timber load lines shall be used:

(a). The Summer Timber Load Line indicated by the upper edge of a line marked LS.

(b). The Winter Timber Load Line indicated by the upper edge of a line marked LW.

(c). The Winter North Atlantic Timber Load Line indicated by the upper edge of a line marked LWNA.

(d). The Tropical Timber Load Line indicated by the upper edge of a line marked LT.

(e). The Fresh Water Timber Load Line in summer indicated by the upper edge of a line marked LF and marked forward of the vertical line.

The difference between the Fresh Water Timber Load Line in summer and the Summer Timber Load Line is the allowance to be made for loading in fresh water at the other timber load lines.

(f). The Tropical Fresh Water Timber Load Line indicated by the upper edge of a line marked LTF and marked forward of the vertical line.

(5). Where the characteristics of a ship or the nature of the ship's service or navigational limits make any of the seasonal lines inapplicable, these lines may be omitted.

(6). Where a ship is assigned a greater than minimum freeboard so that the load line is marked at a position corresponding to, or lower than, the lowest seasonal load line assigned at minimum freeboard in accordance with the present Convention, only the Fresh Water Load Line need be marked.

(7). On sailing ships only the Fresh Water Load Line and the Winter North Atlantic Load Line need be marked (as illustrated in Figure 4).

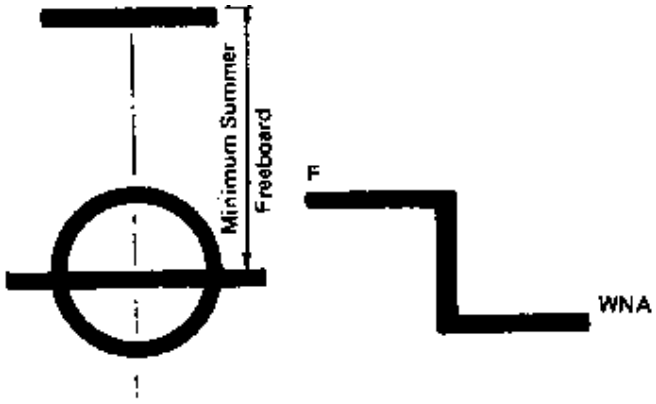

Fig. 4. Load Line Mark on sailing ships and lines to be used with this mark

(8). Where a Winter North Atlantic Load Line is identical with the Winter Load Line corresponding to the same vertical line, this load line shall be marked W.

(9). Additional load lines required by other international conventions in force may be marked at right angles to and abaft the vertical line specified in paragraph (1) of this Regulation.

Regulation 7 - *Mark of Assigning Authority*

The mark of the Authority by whom the load lines are assigned may be indicated alongside the load line ring above the horizontal line which passes through the centre of the ring, or above and below it. This mark shall consist of not more than four initials to identify the Authority's name, each measuring approximately 115 millimetres (4½ inches) in height and 75 millimetres (3 inches) in width

Regulation 8 - *Details of Marking*

The ring, lines and letters shall be painted in white or yellow on a dark ground or in black on a light ground. They shall also be permanently marked on the sides of the ships to the satisfaction of the Surveyor General. The marks shall be plainly visible and, if necessary, special arrangements shall be made for this purpose

Regulation 9 - *Verification of Marks*

The International Load Line Certificate (1966) shall not be delivered to the ship until the authorized officer or surveyor has certified that the marks are correctly and permanently indicated on the ship's sides

Chapter II - Conditions of Assignment of Freeboard

Regulation 10 - *Information to be supplied to the Master*

(1). The master of every new ship shall be supplied with sufficient information, in an approved form, to enable him to arrange for the loading and ballasting of his ship in such a way as to avoid the creation of any unacceptable stresses in the ship's structure, provided that this requirement need not apply to any particular length, design or class of ship where the Surveyor General considers it to be unnecessary.

(2). The master of every new ship which is not already provided with stability information under an international convention for the safety of life at sea in force shall be supplied with sufficient information in an approved form to give him guidance as to the stability of the ship under varying conditions of service, and a copy shall be furnished to the Surveyor General

Regulation 11 - *Superstructure End Bulkheads*

Bulkheads at exposed ends of enclosed superstructures shall be of efficient construction and shall be to the satisfaction of the Surveyor General

Regulation 12 - *Doors*

(1). All access openings in bulkheads at ends of enclosed superstructures shall be fitted with doors of steel or other equivalent material, permanently and strongly attached to the bulkhead, and framed, stiffened and fitted so that the whole structure is of equivalent strength to the unpierced bulkhead and weathertight when closed. The means for securing these doors weathertight shall consist of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves, and the doors shall be so arranged that they can be operated from both sides of the bulkhead.

(2). Except as otherwise provided in these Regulations, the height of the sills of access openings in bulkheads at ends of enclosed superstructures shall be at least 380 millimetres (15 inches) above the deck

Regulation 13 - *Position of Hatchways, Doorways and Ventilators*

For the purpose of the Regulations, two positions of hatchways, doorways and ventilators are defined as follows:

Position 1 - Upon exposed freeboard and raised quarter decks, and upon exposed superstructure decks situated forward of a point located a quarter of the ship's length from the forward perpendicular.

Position 2 - Upon exposed superstructure decks situated abaft a quarter of the ship's length from the forward perpendicular

Regulation 14 - *Cargo and other Hatchways*

(1). The construction and the means for securing the weathertightness of cargo and other hatchways in positions 1 and 2 shall be at least equivalent to the requirements of Regulations 15 and 16 of this Annex.

(2). Coamings and hatchway covers to exposed hatchways on decks above the superstructure deck shall comply with the requirements of the Surveyor General

Regulation 15 - *Hatchways closed by Portable Covers and secured Weathertight by Tarpaulins and Battening Devices*

Hatchway Coamings

(1). The coamings of hatchways closed by portable covers secured weathertight by tarpaulins and battening devices shall be of substantial construction, and their height above the deck shall be at least as follows:

600 millimetres (23½ inches) if in position 1.

450 millimetres (17½ inches) if in position 2.

Hatchway Covers

(2). The width of each bearing surface for hatchway covers shall be at least 65 millimetres (2½ inches).

(3). Where covers are made of wood, the finished thickness shall be at least 60 millimetres (2 inches) in association with a span of not more than 1.5 metres (4.9 feet).

(4). Where covers are made of mild steel the strength shall be calculated with assumed loads not less than 1.75 metric tons per square metre (358 pounds per square foot) on hatchways in position 1, and not less than 1.30 metric tons per square metre (266 pounds per square foot) on hatchways in position 2, and the product of the maximum stress thus calculated and the factor 4.25 shall not exceed the minimum ultimate strength of the material. They shall be so designed as to limit the deflection to not more than 0.0028 times the span under these loads.

(5). The assumed loads on hatchways in position 1 may be reduced to 1 metric ton per square metre (205 pounds per square foot) for ships of 24 metres (79 feet) in length and shall be not less than 1.75 metric tons per square metre (358 pounds per square foot) for ships of 100 metres (328 feet) in length. The corresponding loads on hatchways in position 2 may be reduced to 0.75 metric tons per square metre (154 pounds per square foot) and 1.30 metric tons per square metre (266 pounds per square foot) respectively. In all cases values at intermediate lengths shall be obtained by linear interpolation.

Portable Beams

(6). Where portable beams for supporting hatchway covers are made of mild steel the strength shall be calculated with assumed loads not less than 1.75 metric tons per square metre (358 pounds per square foot) on hatchways in position 1 and not less than 1.30 metric tons per square metre (266 pounds per square foot) on hatchways in position 2 and the product of the maximum stress thus calculated and the factor 5 shall not exceed the minimum ultimate strength of the material. They shall be so designed as to limit the deflection to not more than 0.0022 times the span under these loads. For ships of not more than 100 metres (328 feet) in length the requirements of paragraph (5) of this Regulation are applicable.

Pontoon Covers

(7). Where pontoon covers used in place of portable beams and covers are made of mild steel the strength shall be calculated with the assumed loads given in paragraph (4) of this Regulation, and the product of the maximum stress thus calculated and the factor 5 shall not exceed the minimum ultimate strength of the material. They shall be so designed as to limit the deflection to not more than 0.0022 times the span. Mild steel plating forming the tops of covers shall be not less in thickness than one per cent of the spacing of stiffeners or 6 millimetres (0.24 inches) if that be greater. For ships of not more than 100 metres (328 feet) in length the requirements of paragraph (5) of this Regulation are applicable.

(8). The strength and stiffness of covers made of materials other than mild steel shall be equivalent to those of mild steel to the satisfaction of the Surveyor General.

Carriers or Sockets

(9). Carriers or sockets for portable beams shall be of substantial construction, and shall provide means for the efficient fitting and securing of the beams. Where rolling types of beams are used, the arrangements shall ensure that the beams remain properly in position when the hatchway is closed.

Cleats

(10). Cleats shall be set to fit the taper of the wedges. They shall be at least 65 millimetres (2½ inches) wide and spaced not more than 600 millimetres (23½ inches) centre to centre; the cleats along each side or end shall be not more than 150 millimetres (6 inches) from the hatch corners.

Battens and Wedges

(11). Battens and wedges shall be efficient and in good condition. Wedges shall be of tough wood or other equivalent material. They shall have a taper of not more than 1 in 6 and shall be not less than 13 millimetres (½ inch) thick at the toes.

Tarpaulins

(12). At least two layers of tarpaulin in good condition shall be provided for each hatchway in position 1 or 2. The tarpaulins shall be waterproof and of ample strength. They shall be of a material of at least an approved standard weight and quality.

Security of Hatchway Covers

(13). For all hatchways in position 1 or 2 steel bars or other equivalent means shall be provided in order efficiently and independently to secure each section of hatchway covers after the tarpaulins are battened down. Hatchway covers of more than 1.5 metres (4.9 feet) in length shall be secured by at least two such securing appliances.

Regulation 16 - *Hatchways closed by Weathertight Covers of Steel or other equivalent material fitted with Gaskets and Clamping Devices*

Hatchway Coamings

(1). At positions 1 and 2 the height above the deck of hatchway coamings fitted with weathertight hatch covers of steel or other equivalent material fitted with gaskets and clamping devices shall be as specified in Regulation 15 (1). The height of these coamings may be reduced, or the coamings omitted entirely, on condition that the Surveyor General is satisfied that the safety of the ship is not thereby impaired in any sea conditions. Where coamings are provided they shall be of substantial construction.

Weathertight Covers

(2). Where weathertight covers are of mild steel the strength shall be calculated with assumed loads not less than 1.75 metric tons per square metre (358 pounds per square foot) on hatchways in position 1, and not less than 1.30 metric tons per square metre (266 pounds per square foot) on hatchways in position 2, and the product of the maximum stress thus calculated and the factor of 4.25 shall not exceed the minimum ultimate strength of the material. They shall be so designed as to limit the deflection to not more than 0.0028 times the span under these loads. Mild steel plating forming the tops of covers shall be not less in thickness than one per cent of the spacing of stiffeners or 6 millimetres (0.24 inches) if that be

greater. The provisions of Regulation 15 (5) are applicable for ships of not more than 100 metres (328 feet) in length.

(3). The strength and stiffness of covers made of materials other than mild steel shall be equivalent to those of mild steel to the satisfaction of the Surveyor General.

Means for Securing Weathertightness

(4). The means for securing and maintaining weathertightness shall be to the satisfaction of the Surveyor General. The arrangements shall ensure that the tightness can be maintained in any sea conditions, and for this purpose tests for tightness shall be required at the initial survey, and may be required at periodical surveys and at annual inspections or at more frequent intervals

Regulation 17 - *Machinery Space Openings*

(1). Machinery space openings in position 1 or 2 shall be properly framed and efficiently enclosed by steel casings of ample strength, and where the casings are not protected by other structures their strength shall be specially considered. Access openings in such casings shall be fitted with doors complying with the requirements of Regulation 12 (1), the sills of which shall be at least 600 millimetres (23½ inches) above the deck if in position 1, and at least 380 millimetres (15 inches) above the deck if in position 2. Other openings in such casings shall be fitted with equivalent covers, permanently attached in their proper positions.

(2). Coamings of any fiddley, funnel or machinery space ventilator in an exposed position on the freeboard or superstructure deck shall be as high above the deck as is reasonable and practicable. Fiddley openings shall be fitted with strong covers of steel or other equivalent material permanently attached in their proper positions and capable of being secured weathertight.

Regulation 18 - *Miscellaneous Openings in Freeboard and Superstructure Decks*

(1). Manholes and flush scuttles in position 1 or 2 or within superstructures other than enclosed superstructures shall be closed by substantial covers capable of being made watertight. Unless secured by closely spaced bolts, the covers shall be permanently attached.

(2). Openings in freeboard decks other than hatchways, machinery space openings, manholes and flush scuttles shall be protected by an enclosed superstructure, or by a deckhouse or companionway of equivalent strength and weathertightness. Any such opening in an exposed superstructure deck or in the top of a deckhouse on the freeboard deck which gives access to a space below the freeboard deck or a space within an enclosed superstructure shall be protected by an efficient deckhouse or companionway. Doorways in such deckhouses or companionways shall be fitted with doors complying with the requirements of Regulation 12 (1).

(3). In position 1 the height above the deck of sills to the doorways in companionways shall be at least 600 millimetres (23½ inches). In position 2 it shall be at least 380 millimetres (15 inches).

Regulation 19 - *Ventilators*

(1). Ventilators in position 1 or 2 to spaces below freeboard decks or decks of enclosed superstructures shall have coamings of steel or other equivalent material, substantially constructed and efficiently connected to the deck. Where the coaming of any ventilator exceeds 900 millimetres (35½ inches) in height it shall be specially supported.

(2). Ventilators passing through superstructures other than enclosed superstructures shall have substantially constructed coamings of steel or other equivalent material at the freeboard deck.

(3). Ventilators in position 1 the coamings of which extend to more than 4.5 metres (14.8 feet) above the deck, and in position 2 the coamings of which extend to more than 2.3 metres (7.5 feet) above the deck, need not be fitted with closing arrangements unless specifically required by the Surveyor General.

(4). Except as provided in paragraph (3) of this Regulation ventilator openings shall be provided with efficient weathertight closing appliances. In ships of not more than 100 metres (328 feet) in length the closing appliances shall be permanently attached; where not so provided in other ships, they shall be conveniently stowed near the ventilators to which they are to be fitted. Ventilators in position 1 shall have coamings of a height of at least 900 millimetres (35½ inches) above the deck; in position 2 the coamings shall be of a height at least 760 millimetres (30 inches) above the deck.

(5). In exposed positions, the height of coamings may be required to be increased to the satisfaction of the Surveyor General

Regulation 20 - *Air Pipes*

Where air pipes to ballast and other tanks extend above the freeboard or superstructure decks, the exposed parts of the pipes shall be of substantial construction; the height from the deck to the point where water may have access below shall be at least 760 millimetres (30 inches) on the freeboard deck and 450 millimetres (17½ inches) on the superstructure deck. Where these heights may interfere with the working of the ship, a lower height may be approved, provided the Surveyor General is satisfied that the closing arrangements and other circumstances justify a lower height. Satisfactory means permanently attached, shall be provided for closing the openings of the air pipes

Regulation 21 - *Cargo Ports and other similar Openings*

(1). Cargo ports and other similar openings in the sides of ships below the freeboard deck shall be fitted with doors so designed as to ensure watertightness and structural integrity commensurate with the surrounding shell plating. The number of such openings shall be the minimum compatible with the design and proper working of the ship.

(2). Unless permitted by the Surveyor General, the lower edge of such openings shall not be below a line drawn parallel to the freeboard deck at side, which has at its lowest point the upper edge of the uppermost load line.

Regulation 22 - *Scuppers, Inlets and Discharges*

(1). Discharges led through the shell either from spaces below the freeboard deck or from within superstructures and deckhouses on the freeboard deck fitted with doors complying with the requirements of Regulation 12 shall be fitted with efficient and accessible means for preventing water from passing inboard. Normally each separate discharge shall have one automatic non-return valve with a positive means of closing it from a position above the freeboard deck. Where, however, the vertical distance from the summer load waterline to the inboard end of the discharge pipe exceeds 0.01 L, the discharge may have two automatic non-return valves without positive means of closing, provided that the inboard valve is always accessible for examination under service conditions; where that vertical distance exceeds 0.02 L a single automatic non-return valve without positive means of closing may be accepted subject to the

approval of the Surveyor General. The means for operating the positive action valve shall be readily accessible and provided with an indicator showing whether the valve is open or closed.

(2). In manned machinery spaces main and auxiliary sea inlets and discharges in connexion with the operation of machinery may be controlled locally. The controls shall be readily accessible and shall be provided with indicators showing whether the valves are open or closed.

(3). Scuppers and discharge pipes originating at any level and penetrating the shell either more than 450 millimetres (17½ inches) below the freeboard deck or less than 600 millimetres (23½ inches) above the summer load waterline shall be provided with a non-return valve at the shell. This valve, unless required by paragraph (1), may be omitted if the piping is of substantial thickness.

(4). Scuppers leading from superstructures or deckhouses not fitted with doors complying with the requirements of Regulation 12 shall be led overboard.

(5). All valves and shell fittings required by this Regulation shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. All pipes to which this Regulation refers shall be of steel or other equivalent material to the satisfaction of the Surveyor General.

Regulation 23 - *Side Scuttles*

(1). Side scuttles to spaces below the freeboard deck or to spaces within enclosed superstructures shall be fitted with efficient hinged inside deadlights arranged so that they can be effectively closed and secured watertight.

(2). No side scuttle shall be fitted in a position so that its sill is below a line drawn parallel to the freeboard deck at side and having its lowest point 2.5 per cent of the breadth (B) above the load waterline, or 500 millimetres (19½ inches), whichever is the greater distance.

(3). The side scuttles, together with their glasses, if fitted, and deadlights, shall be of substantial and approved construction

Regulation 24 - *Freeing Ports*

(1). Where bulwarks on the weather portions of freeboard or superstructure decks form wells, ample provision shall be made for rapidly freeing the decks of water and for draining them. Except as provided in paragraphs (2) and (3) of this Regulation, the minimum freeing port area (A) on each side of the ship for each well on the freeboard deck shall be that given by the following formulae in cases where the sheer in way of the well is standard or greater than standard. The minimum area for each well on superstructure decks shall be one-half of the area given by the formulae.

Where the length of bulwark (ℓ) in the well is 20 metres or less

$A = 0.7 + 0.035\ \ell$ **square metres**

where ℓ exceeds 20 metres

$A = 0.7\ell$ **square metres**

ℓ need in no case be taken as greater than 0.7 L.

If the bulwark is more than 1.2 metres in average height the required area shall be increased by 0.004 square metres per metre of length of well for each 0.1 metre difference in height. If the bulwark is less than 0.9 metre in average height, the required area may be decreased by 0.004 square metres per metre of length of well for each 0.1 metre difference in height.

Or,

where the length of bulwark (ℓ) in the well is 66 feet or less

$A = 7.6 + 0.115\,\ell$ **square feet**

where ℓ exceeds 66 feet

$A = 0.23\,\ell$ **square feet.**

ℓ need in no case be taken as greater than 0.7 L.

If the bulwark is more than 3.9 feet in average height the required area shall be increased by 0.04 square feet per foot of length of well for each foot difference in height. If the bulwark is less than 3 feet in average height, the required area may be decreased by 0.04 square feet per foot of length for each foot difference in height.

(2). In ships with no sheer the calculated area shall be increased by 50 per cent. Where the sheer is less than the standard the percentage shall be obtained by interpolation.

(3). Where a ship is fitted with a trunk which does not comply with the requirements of Regulation 36 (1) (e) or where continuous or substantially continuous hatchway side coamings are fitted between detached superstructures the minimum area of the freeing port openings shall be calculated from the following table:

BREADTH OF HATCHWAY OR TRUNK IN RELATION TO THE BREADTH OF SHIP	AREA OF FREEING PORTS IN RELATION TO THE TOTAL AREA OF THE BULWARKS
40% or less	20%
75% or more	10%

The area of freeing ports at intermediate breadths shall be obtained by linear interpolation.

(4). In ships having superstructures which are open at either or both ends, adequate provision for freeing the space within such superstructures shall be provided to the satisfaction of the Surveyor General.

(5). The lower edges of the freeing ports shall be as near the deck as practicable. Two-thirds of the freeing port area required shall be provided in the half of the well nearest the lowest point of the sheer curve.

(6). All such openings in the bulwarks shall be protected by rails or bars spaced approximately 230 millimetres (9 inches) apart. If shutters are fitted to freeing ports, ample clearance shall be provided to prevent jamming. Hinges shall have pins or bearings of non-corrodible material. If shutters are fitted with securing appliances, these appliances shall be of approved construction

Regulation 25 - *Protection of the Crew*

(1). The strength of the deckhouses used for the accommodation of the crew shall be to the satisfaction of the Surveyor General.

(2). Efficient guard rails or bulwarks shall be fitted on all exposed parts of the freeboard and superstructure decks. The height of the bulwarks or guard rails shall be at least 1 metre (39½ inches) from the deck, provided that where this height would interfere with the normal operation of the ship, a lesser height may be approved if the Surveyor General is satisfied that adequate protection is provided.

(3). The opening below the lowest course of the guard rails shall not exceed 230 millimetres (9 inches). The other courses shall be not more than 380 millimetres (15 inches) apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck.

(4). Satisfactory means (in the form of guard rails, life lines, gangways or underdeck passages etc.) shall be provided for the protection of the crew in getting to and from their quarters, the machinery space and all other parts used in the necessary work of the ship.

(5). Deck cargo carried on any ship shall be so stowed that any opening which is in way of the cargo and which gives access to and from the crew's quarters, the machinery space and all other parts used in the necessary work of the ship, can be properly closed and secured against the admission of water. Effective protection for the crew in the form of guard rails or life lines shall be provided above the deck cargo if there is no convenient passage on or below the deck of the ship

Regulation 26 - *Special Conditions of Assignment for Type 'A' Ships*

Machinery Casings

(1). Machinery casings on Type 'A' ships as defined in Regulation 27 shall be protected by an enclosed poop or bridge of at least standard height, or by a deckhouse of equal height and equivalent strength, provided that machinery casings may be exposed if there are no openings giving direct access from the freeboard deck to the machinery space. A door complying with the requirements of Regulation 12 may, however, be permitted in the machinery casing, provided that it leads to a space or passageway which is as strongly constructed as the casing and is separated from the stairway to the engine room by a second weathertight door of steel or other equivalent material.

Gangway and Access

(2). An efficiently constructed fore and aft permanent gangway of sufficient strength shall be fitted on Type 'A' ships at the level of the superstructure deck between the poop and the midship bridge or deckhouse where fitted, or equivalent means of access shall be provided to carry out the purpose of the gangway, such as passages below deck. Elsewhere, and on Type 'A' ships without a midship bridge, arrangements to the satisfaction of the Surveyor General shall be provided to safeguard the crew in reaching all parts used in the necessary work of the ship.

(3). Safe and satisfactory access from the gangway level shall be available between separate crew accommodations and also between crew accommodations and the machinery space.

Hatchways

(4). Exposed hatchways on the freeboard and forecastle decks or on the tops of expansion trunks on Type 'A' ships shall be provided with efficient watertight covers of steel or other equivalent material.

Freeing Arrangements

(5). Type 'A' ships with bulwarks shall have open rails fitted for at least half the length of the exposed parts of the weather deck or other effective freeing arrangements. The upper edge of the sheer strake shall be kept as low as practicable.

(6). Where superstructures are connected by trunks, open rails shall be fitted for the whole length of the exposed parts of the freeboard deck

Chapter III - Freeboards

Regulation 27 - *Types of Ships*

(1). For the purposes of freeboard computation ships shall be divided into Type 'A' and Type 'B'.

Type 'A' ships

(2). A Type 'A' ship is one which is designed to carry only liquid cargoes in bulk, and in which cargo tanks have only small access openings closed by watertight gasketed covers of steel or equivalent material.

Such a ship necessarily has the following inherent features:

(a). high integrity of the exposed deck; and

(b). high degree of safety against flooding, resulting from the low permeability of loaded cargo spaces and the degree of subdivision usually provided.

(3). A Type 'A' ship, if over 150 metres (492 feet) in length, and designed to have empty compartments when loaded to its summer load waterline, shall be able to withstand the flooding of any one of these empty compartments at an assumed permeability of 0.95, and remain afloat in a condition of equilibrium considered to be satisfactory by the Surveyor General. In such a ship, if over 225 metres (738 feet) in length, the machinery space shall be treated as a floodable compartment but with a permeability of 0.85.

For the guidance of Surveyor General the following limits may be regarded as satisfactory:

(a). the final waterline after flooding is below the lower edge of any opening through which progressive flooding may take place;

(b). the maximum angle of heel due to unsymmetrical flooding is of the order of 15 degrees;

(c). the metacentric height in the flooded condition is positive.

(4). A Type 'A' ship shall be assigned a freeboard not less than that based on Table A of Regulation 28.

Type 'B' ships

(5). All ships which do not come within the provisions regarding Type 'A' ships in paragraphs (2) and (3) of this Regulation shall be considered as Type 'B' ships.

(6). Type 'B' ships, which in position 1 have hatchways fitted with hatch covers complying with the requirements of Regulation 15 (7) or 16 shall, except as provided in paragraphs (7) to (10) inclusive of this Regulation, be assigned freeboards based on Table B of Regulation 28.

(7). Any Type 'B' ships of over 100 metres (328 feet) in length may be assigned freeboards less than those required under paragraph (6) of this Regulation provided that, in relation to the amount of reduction granted, the Surveyor General is satisfied that:

(a). the measures provided for the protection of the crew are adequate;

(b). the freeing arrangements are adequate;

(c). the covers in positions 1 and 2 comply with the provisions of Regulation 16 and have adequate strength, special care being given to their sealing and securing arrangements;

(d). the ship, when loaded to its summer load waterline, will remain afloat in a satisfactory condition of equilibrium after flooding of any single damaged compartment at an assumed permeability of 0.95 excluding the machinery space; and

(e). in such a ship, if over 225 metres (738 feet) in length, the machinery space shall be treated as a floodable compartment but with a permeability of 0.85.

For the guidance of Surveyor General in applying sub-paragraphs (d) and (e) of this paragraph the limits given in sub-paragraphs (3) (a), (b) and (c) may be regarded as satisfactory.

The relevant calculations may be based upon the following main assumptions:

- the vertical extent of damage is equal to the depth of the ship;
- the penetration of damage is not more than B/5;
- no main transverse bulkhead is damaged;
- the height of the centre of gravity above the base line is assessed allowing for homogeneous loading of cargo holds, and for 50 per cent of the designed capacity of consumable fluids and stores, etc.

(8). In calculating the freeboards for Type 'B' ships which comply with the requirements of paragraph (7) of this Regulation, the values from Table B of Regulation 28 shall not be reduced by more than 60 per cent of the difference between the 'B' and 'A' tabular values for the appropriate ship lengths.

(9). The reduction in tabular freeboard allowed under paragraph (8) of this Regulation may be increased up to the total difference between the values in Table A and those in Table B of Regulation 28 on condition that the ship complies with the requirements of Regulation 26 (1), (2), (3), (5) and (6), as if it were a Type 'A' ship, and further complies with the provisions of paragraph (7) (a) to (d) inclusive of this Regulation except that the reference in sub-paragraph (d) to the flooding of any single damaged compartment shall be treated as a reference to the flooding of any two adjacent fore and aft compartments, neither of which is the machinery space. Also any such ship of over 225 metres (738 feet) in length, when loaded to its summer load waterline, shall remain afloat in a satisfactory condition of equilibrium after flooding of the machinery space, taken alone, at an assumed permeability of 0.85.

(10). Type 'B' ships, which in position 1 have hatchways fitted with hatch covers which comply with the requirements of Regulation 15, other than paragraph (7), shall be assigned freeboards based upon the values given in Table B of Regulation 28 increased by the values given in the following table:

Freeboard increase over tabular freeboard for Type 'B' ships, for ships with hatch covers not complying with Regulation 15(7) or 16

Length of ship (metres)	Freeboard increase (milli-metres)	Length of ship (metres)	Freeboard increase (milli-metres)	Length of ship (metres)	Freeboard increase (milli-metres)
108 and below	50	139	175	170	290
109	52	140	181	171	292
110	55	141	186	172	294
111	57	142	191	173	297
112	59	143	196	174	299
113	62	144	201	175	301
114	64	145	206	176	304
115	68	146	210	177	306
116	70	147	215	178	308
117	73	148	219	179	311
118	76	149	224	180	313
119	80	150	228	181	315
120	84	151	232	182	318
121	87	152	236	183	320
122	91	153	240	184	322
123	95	154	244	185	325
124	99	155	247	186	327
125	103	156	251	187	329
126	108	157	254	188	332
127	112	158	258	189	334
128	116	159	261	190	336
129	121	160	264	191	339
130	126	161	267	192	341
131	131	162	270	193	343
132	136	163	273	194	346
133	142	164	275	195	348
134	147	165	278	196	350
135	153	166	280	197	353

136	159	167	283	198	355
137	164	168	285	199	357
138	170	169	287	200	358

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 200 metres in length shall be dealt with by the Surveyor General.

Freeboard increase over tabular freeboard for Type 'B' ships, for ships with hatch covers not complying with Regulation 15(7) or 16

Length of ship (feet)	Freeboard increase (inches)	Length of ship (feet)	Freeboard increase (inches)
350 and below	2.0	510	9.6
360	2.3	520	10.0
370	2.6	530	10.4
380	2.9	540	10.7
390	3.3	550	11.0
400	3.7	560	11.4
410	4.2	570	11.8
420	4.7	580	12.1
430	5.2	590	12.5
440	5.8	600	12.8
450	6.4	610	13.1
460	7.0	620	13.4
470	7.6	630	12.6
480	8.2	640	13.9
490	8.7	650	14.1
500	9.2	660	14.3

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 660 feet in length shall be dealt with by the Surveyor General.

(11). A lighter, barge or other ship without independent means of propulsion shall be assigned a freeboard in accordance with the provisions of these Regulations. However, in the case of barges which are unmanned the requirements of Regulations 25, 26 (2) and (3) and 39 shall not apply. Such unmanned barges which have on the freeboard deck only small access openings closed by watertight gasketed covers of steel or equivalent material may be

assigned freeboards 25 per cent less than those calculated in accordance with these Regulations

Regulation 28 - *Freeboard Tables*

(1) *Type 'A' Ships*

The tabular freeboard for Type 'A' ships shall be determined from the following table:

Table A Freeboard Table for Type 'A' Ships

Length of ship (metres)	Freeboard (milli-metres)	Length of ship (metres)	Freeboard (milli-metres)	Length of ship (metres)	Freeboard (milli-metres)
24	200	138	1770	252	3024
25	208	139	1787	253	3030
26	217	140	1803	254	3036
27	225	141	1820	255	3042
28	233	142	1837	256	3048
29	242	143	1853	257	3054
30	250	144	1870	258	3060
31	258	145	1886	259	3066
32	267	146	1903	260	3072
33	275	147	1919	261	3078
34	283	148	1935	262	3084
35	292	149	1952	263	3089
36	300	150	1968	264	3095
37	308	151	1984	265	3101
38	316	152	2000	266	3106
39	325	153	2016	267	3112
40	334	154	2032	268	3117
41	344	155	2048	269	3123
42	354	156	2064	270	3128
43	364	157	2080	271	3133
44	374	158	2096	272	3138

45	385	159	2111	273	3143
46	396	160	2126	274	3148
47	408	161	2141	275	3153
48	420	162	2155	276	3158
49	432	163	2169	277	3163
50	443	164	2184	278	3167
51	455	165	2198	279	3172
52	467	166	2212	280	3176
53	478	167	2226	281	3181
54	490	168	2240	282	3185
55	503	169	2254	283	3189
56	516	170	2268	284	3194
57	530	171	2281	285	3198
58	544	172	2294	286	3202
59	559	173	2307	287	3207
60	573	174	2320	288	3211
61	587	175	2332	289	3215
62	600	176	2345	290	3220
63	613	177	2357	291	3224
64	626	178	2369	292	3228
65	639	179	2381	293	3233
66	653	180	2393	294	3237
67	666	181	2405	295	3241
68	680	182	2416	296	3246
69	693	183	2428	297	3250
70	706	184	2440	298	3254
71	420	185	2451	299	2358
72	733	186	2463	300	3262

73	746	187	2474	301	3266
74	760	188	2486	302	3270
75	773	189	2497	303	3274
76	786	190	2508	304	3278
77	800	191	2519	305	3281
78	814	192	2530	306	3285
79	828	193	2541	307	3288
80	841	194	2552	308	3292
81	855	195	2562	309	3295
82	869	196	2572	310	3298
83	883	197	2582	311	3302
84	897	198	2592	312	3305
85	911	199	2602	313	3308
86	926	200	2612	314	3312
87	940	201	2622	315	3315
88	955	202	2632	316	3318
89	969	203	2641	317	3322
90	984	204	2650	318	3325
91	999	205	2659	319	3328
92	1014	206	2669	320	3331
93	1029	207	2678	321	3334
94	1044	208	2687	322	3337
95	1059	209	2696	323	3339
96	1074	210	2705	324	3342
97	1089	211	2714	325	3345
98	1105	212	2723	326	3347
99	1120	213	2723	327	3350
100	1135	214	2741	328	3353

101	1151	215	2749	329	3355
102	1166	216	2758	330	3358
103	1181	217	2767	331	3361
104	1196	218	2775	332	3363
105	1212	219	2784	333	3366
106	1228	220	2792	334	3368
107	1244	221	2801	335	3371
108	1260	222	2809	336	3373
109	1276	223	2817	337	3375
110	1293	224	2825	338	3378
111	1309	225	2833	339	3380
112	1326	226	2841	340	3382
113	1342	227	2849	341	3385
114	1359	228	2857	342	3387
115	1376	229	2865	343	3389
116	1392	230	2872	344	3392
117	1409	231	2880	345	3394
118	1426	232	2888	346	3396
119	1442	233	2895	347	3399
120	1459	234	2903	348	3401
121	1476	235	2910	349	3403
122	1494	236	2918	350	3406
123	1511	237	2925	351	3408
124	1528	238	2932	352	3410
125	1546	239	2939	353	3412
126	1563	240	2946	354	3414
127	1580	241	2953	355	3416
128	1598	242	2959	356	3418

129	1615	243	2966	357	3420
130	1632	244	2973	358	3422
131	1650	245	2979	359	3423
132	1667	246	2986	360	3425
133	1684	247	2993	361	3427
134	1702	248	3000	362	3428
135	1719	249	3006	363	3430
136	1736	250	3012	364	3432
137	1753	251	3018	365	3433

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 365 metres in length shall be dealt with by the Surveyor General.

Table A Freeboard Table for Type 'A' Ships

Length of ship (feet)	Freeboard (inches)	Length of ship (feet)	Freeboard (inches)	Length of ship (feet)	Freeboard (inches)
80	8.0	460	71.1	840	120.1
90	8.9	470	73.1	850	120.7
100	9.8	480	75.1	860	121.4
110	10.8	490	77.1	870	122.1
120	11.9	500	79.0	880	122.7
130	13.0	510	80.9	890	123.4
140	14.2	520	82.7	900	124.0
150	15.5	530	84.5	910	124.6
160	16.9	540	86.3	920	125.2
170	18.3	550	88.0	930	125.7
180	19.8	560	89.6	940	126.2
190	21.3	570	91.1	950	126.7
200	22.9	580	92.6	960	127.2
210	24.5	590	94.1	970	127.7
220	26.2	600	95.5	980	128.1

230	27.8	610	96.9	990	128.6
240	29.5	620	98.3	1000	129.0
250	31.1	630	99.6	1010	129.4
260	32.8	640	100.9	1020	129.9
270	34.6	650	102.1	1030	130.3
280	36.3	660	103.3	1040	130.7
290	38.0	670	104.4	1050	131.0
300	39.7	680	105.5	1060	131.4
310	41.4	690	106.6	1070	131.7
320	43.2	700	107.7	1080	132.0
330	45.0	710	108.7	1090	132.3
340	46.9	720	109.7	1100	132.6
350	48.8	730	110.7	1110	132.9
360	50.7	740	111.7	1120	133.2
370	52.7	750	112.6	1130	133.5
380	54.7	760	113.5	1140	133.8
390	56.8	770	114.4	1150	134.0
400	58.8	780	115.3	1160	134.3
410	60.9	790	116.1	1170	134.5
420	62.9	800	117.0	1180	134.7
430	65.0	810	117.8	1190	135.0
440	67.0	820	118.6	1200	135.2
450	69.1	830	119.3		

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 1200 feet in length shall be dealt with by the Surveyor General

(2) *Type 'B' Ships*

The tabular freeboard for Type 'B' ships shall be determined from the following table:

Table B Freeboard Table for Type 'B' Ships

Length of ship (metres)	Freeboard (milli-metres)	Length of ship (metres)	Freeboard (milli-metres)	Length of ship (metres)	Freeboard (milli-metres)
24	200	138	2065	252	4045
25	208	139	2087	253	4058
26	217	140	2109	254	4072
27	225	141	2130	255	4085
28	233	142	2151	256	4098
29	242	143	2171	257	4112
30	250	144	2190	258	4125
31	258	145	2209	259	4139
32	267	146	2229	260	4152
33	275	147	2250	261	4165
34	283	148	2271	262	4177
35	292	149	2293	263	4189
36	300	150	2315	264	4201
37	308	151	2334	265	4214
38	316	152	2354	266	4227
39	325	153	2375	267	4240
40	334	154	2396	268	4252
41	344	155	2418	269	4264
42	354	156	2440	270	4276
43	364	157	2460	271	4289
44	374	158	2480	272	4302
45	385	159	2500	273	4315
46	396	160	2520	274	4327
47	408	161	2540	275	4339
48	420	162	2560	276	4350
49	432	163	2580	277	4362
50	443	164	2600	278	4373

51	455	165	2620	279	7385
52	467	166	2640	280	7397
53	478	167	2660	281	4408
54	490	168	2680	282	4420
55	503	169	2698	283	4432
56	516	170	2716	284	4443
57	530	171	1735	285	4455
58	544	172	2754	286	4467
59	559	173	2774	287	4478
60	573	174	2795	288	4490
61	587	175	2815	289	4502
62	601	176	2835	290	4513
63	615	177	2855	291	4525
64	629	178	2875	292	4537
65	644	179	2895	293	4548
66	659	180	2915	294	4560
67	674	181	2933	295	4572
68	689	182	2952	296	4583
69	705	183	2970	297	4595
70	721	184	2988	298	4607
71	738	185	3007	299	4618
72	754	186	3025	300	4630
73	769	187	3044	301	4642
74	784	188	3062	302	4654
75	800	189	3080	303	4665
76	816	190	3098	304	4676
77	833	191	3116	305	4686
78	850	192	3134	306	4695

79	868	193	3151	307	4704
80	887	194	3167	308	4714
81	905	195	3185	309	4725
82	923	196	3202	310	4736
83	942	197	3219	311	4748
84	960	198	3235	312	4757
85	978	199	3249	313	4768
86	996	200	3264	314	4779
87	1015	201	3280	315	4790
88	1034	202	3296	316	4801
89	1054	203	3313	317	4812
90	1075	204	3330	318	4823
91	1096	205	3347	319	3834
92	1116	206	3363	320	4844
93	1135	207	3380	321	4855
94	1154	208	3397	322	4866
95	1172	209	3413	323	4878
96	1190	210	3430	324	4890
97	1209	211	3445	325	4899
98	1229	212	3460	326	4909
99	1250	213	3475	327	4920
100	1271	214	3490	328	4931
101	1293	215	3505	329	4943
102	1315	216	3520	330	4955
103	1337	217	3537	331	4965
104	1359	218	3554	332	4975
105	1380	219	3570	333	4985
106	1401	220	3586	334	4995

107	1421	221	3601	335	5005
108	1440	222	3615	336	5015
109	1459	223	3630	337	5025
110	1479	224	3645	338	5235
111	1500	225	3660	339	5045
112	1521	226	3675	340	5055
113	1543	227	3690	341	5065
114	1565	228	3705	342	5075
115	1587	229	3720	343	5086
116	1609	230	3735	344	5097
117	1630	231	3750	345	5108
118	1651	232	3765	346	5119
119	1671	233	3780	347	5130
120	1690	234	3795	348	5140
121	1709	235	3808	349	5150
122	1729	236	3821	350	5060
123	1750	237	3835	351	5070
124	1771	238	3849	352	5080
125	1793	239	3864	353	5090
126	1815	240	3880	354	5200
127	1837	241	3893	355	5210
128	1859	242	3906	356	5220
129	1880	243	3920	357	5230
130	1901	244	3934	358	5240
131	1921	245	3949	359	5250
132	1940	246	3965	360	5260
133	1959	247	3978	361	5268
134	1979	248	3992	362	5276

135	2000	249	4005	363	5085
136	2021	250	4018	364	5294
137	2043	251	4032	365	5303

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 365 metres in length shall be dealt with by the Surveyor General.

Table B Freeboard Table for Type 'B' Ships

Length of ship (feet)	Freeboard (inches)	Length of ship (feet)	Freeboard (inches)	Length of ship (feet)	Freeboard (inches)
80	8.0	460	83.1	840	161.2
90	8.9	470	85.6	850	162.8
100	9.8	480	88.1	860	164.3
110	10.8	490	90.6	870	165.9
120	11.9	500	93.1	880	167.4
130	13.0	510	95.6	890	168.9
140	14.2	520	98.1	900	170.4
150	15.5	530	100.6	910	171.8
160	16.9	540	103.0	920	173.3
170	18.3	550	105.4	930	174.7
180	19.8	560	107.7	940	176.1
190	21.3	570	110.0	950	177.5
200	22.9	580	112.3	960	178.9
210	24.7	590	114.6	970	180.3
220	26.6	600	116.8	980	181.7
230	28.5	610	119.0	990	183.1
240	30.4	620	121.1	1000	184.4
250	32.4	630	123.2	1010	185.8
260	34.4	640	125.3	1020	187.2
270	36.5	650	127.3	1030	188.5
280	38.7	660	129.3	1040	189.8

290	41.0	670	131.3	1050	191.0
300	13.3	680	133.3	1060	192.3
310	45.7	690	135.3	1070	193.5
320	48.2	700	137.1	1080	194.8
330	50.7	710	139.0	1090	196.1
340	53.2	720	140.9	1100	197.3
350	55.7	730	142.7	1110	198.6
360	58.2	740	144.5	1120	199.9
370	60.7	750	146.3	1130	201.2
380	63.2	760	148.1	1140	202.3
390	65.7	770	149.8	1150	203.5
400	68.2	780	151.5	1160	204.6
410	70.7	790	153.2	1170	205.8
420	73.2	800	154.8	1180	206.9
430	75.7	810	156.4	1190	208.1
440	78.2	820	158.0	1200	209.3
450	80.7	830	159.6		

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation.

Ships above 1200 feet in length shall be dealt with by the Surveyor General

Regulation 29 - *Correction to the Freeboard for Ships under 100 metres (328 feet) in length*

The tabular freeboard for a Type 'B' ship of between 24 metres (79 feet) and 100 metres (328 feet) in length having enclosed superstructures with an effective length of up to 35 per cent of the length of the ship shall be increased by:

7.5(100 - L)(0.35 - E/L) millimetres

where

L = length of ship in metres,

E = effective length of superstructure in metres as defined in Regulation 35;

or

0.09(328 - L)(0.35 - E/L) inches

where

L = length of ship in feet,

E = effective length of superstructure in metres as defined in Regulation 35.

Regulation 30 - *Correction for Block Coefficient*

Where the block coefficient (C_b) exceeds 0.68, the tabular freeboard specified in Regulation 28 as modified, if applicable, by Regulations 27 (8), 27 (10) and 29 shall be multiplied by the factor

((Cb) + 0.68)/1.36

Regulation 31 - *Correction for Depth*

(1). Where D exceeds L/15 the freeboard shall be increased by

(D - L/15)R millimetres, where R is L/0.48 at lengths less than 120 metres and 250 at 120 metres length and above, or

(D - L/15)R inches, where R is L/131.2 at lengths less than 396.6 feet and 3 at 393.6 feet length and above.

(2). Where D is less than L/15 no reduction shall be made except in a ship with an enclosed superstructure covering at least 0.6 L amidships, with a complete trunk, or combination of detached enclosed superstructures and trunks which extend all fore and aft, where the freeboard shall be reduced at the rate prescribed in paragraph (1) of this Regulation.

(3). Where the height of superstructure or trunk is less than the standard height, the reduction shall be in the ratio of the actual to the standard height as defined in Regulation 33

Regulation 32 - *Correction for Position of Deck Line*

Where the actual depth to the upper edge of the deck line is greater or less than D, the difference between the depths shall be added to or deducted from the freeboard

Regulation 33 - *Standard Height of Superstructure*

The standard height of a superstructure shall be as given in the following table:

Standard Height (in metres)

L (metres)	Raised Quarter Deck	All other Superstructures
30 or less	0.90	1.80
75	1.20	1.80
125 or more	1.80	2.30

Standard Height (in feet)

L (feet)	Raised Quarter Deck	All other Superstructures
98.5 or less	3.0	5.9

246	3.9	5.9
410 or more	5.9	7.5

The standard heights at intermediate lengths of the ship shall be obtained by linear interpolation.

Regulation 34 - *Length of Superstructure*

(1). Except as provided in paragraph (2) of this Regulation, the length of a superstructure (S) shall be the mean length of the parts of the superstructure which lie within the length (L).

(2). Where the end bulkhead of an enclosed superstructure extends in a fair convex curve beyond its intersection with the superstructure sides, the length of the superstructure may be increased on the basis of an equivalent plane bulkhead. This increase shall be two-thirds of the fore and aft extent of the curvature. The maximum curvature which may be taken into account in determining this increase is one-half the breadth of the superstructure at the point of intersection of the curved end of the superstructure with its side

Regulation 35 - *Effective Length of Superstructure*

(1). Except as provided for in paragraph (2) of this Regulation, the effective length (E) of an enclosed superstructure of standard height shall be its length.

(2). In all cases where an enclosed superstructure of standard height is set in from the sides of the ship as permitted in Regulation 3 (10), the effective length shall be the length modified by the ratio of b/Bs, where

b is the breadth of the superstructure at the middle of its length; and

Bs is the breadth of the ship at the middle of the length of the superstructure.

Where a superstructure is set in for a part of its length, this modification shall be applied only to the set in part.

(3). Where the height of an enclosed superstructure is less than the standard height, the effective length shall be its length reduced in the ratio of the actual height to the standard height. Where the height exceeds the standard, no increase shall be made to the effective length of the superstructure.

(4). The effective length of a raised quarter deck, if fitted with an intact front bulkhead, shall be its length up to a maximum of 0.6 L. Where the bulkhead is not intact, the raised quarter deck shall be treated as a poop of less than standard height.

(5). Superstructures which are not enclosed shall have no effective length.

Regulation 36 - *Trunks*

(1). A trunk or similar structure which does not extend to the sides of the ship shall be regarded as efficient on the following conditions:

(a). the trunk is at least as strong as a superstructure;

(b). the hatchways are in the trunk deck, and the hatchway coamings and covers comply with the requirements of Regulations 13 to 16 inclusive and the width of the trunk deck stringer provides a satisfactory gangway and sufficient lateral stiffness. However, small access openings with watertight covers may be permitted in the freeboard deck;

(c). a permanent working platform fore and aft fitted with guard rails is provided by the trunk deck, or by detached trunks connected to superstructures by efficient permanent gangways;

(d). ventilators are protected by the trunk, by watertight covers or by other equivalent means;

(e). open rails are fitted on the weather parts of the freeboard deck in way of the trunk for at least half their length;

(f). the machinery casings are protected by the trunk, by a superstructure of at least standard height, or by a deckhouse of the same height and of equivalent strength;

(g). the breadth of the trunk is at least 60 per cent of the breadth of the ship; and

(h). where there is no superstructure, the length of the trunk is at least 0.6 L.

(2). The full length of an efficient trunk reduced in the ratio of its mean breadth to B shall be its effective length.

(3). The standard height of a trunk is the standard height of a superstructure other than a raised quarter deck.

(4). Where the height of a trunk is less than the standard height, its effective length shall be reduced in the ratio of the actual to the standard height. Where the height of hatchway coamings on the trunk deck is less than that required under Regulation 15 (1), a reduction from the actual height of trunk shall be made which corresponds to the difference between the actual and the required height of coaming

Regulation 37 - *Deduction for Superstructures and Trunks*

(1). Where the effective length of superstructures and trunks is 1.0 L, the deduction from the freeboard shall be 350 millimetres at 24 metres length of ship, 860 millimetres at 85 metres length, and 1070 millimetres at 122 metres length and above (14 inches at 79 feet length of ship, 34 inches at 279 feet length, and 42 inches at 400 feet length and above); deductions at intermediate lengths shall be obtained by linear interpolation.

(2). Where the total effective length of superstructures and trunks is less than 1.0 L the deduction shall be a percentage obtained from one of the following tables:

Percentage of Deduction for Type 'A' ships

	Total Effective Length of Superstructures and Trunks										
	0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1.0 L
Percentage of deduction for all types of superstructures	0	7	14	21	31	41	52	63	75.3	87.7	100

Percentages at intermediate lengths of superstructures shall be obtained by linear interpolation.

Percentage of Deduction for Type 'B' ships

		Line	Total Effective Length of Superstructures and Trunks									
			0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1.0 L
Ships with forecastle and without detached bridge	I	0	5	10	15	23.5	32	46	63	75.3	87.7	100
Ships with forecastle and detached bridge	II	0	6.3	12.7	19	27.5	36	46	63	75.3	87.7	100

Percentages at intermediate lengths of superstructures shall be obtained by linear interpolation.

(3). For ships of Type 'B':

(a). Where the effective length of a bridge is less than 0.2 L, the percentages shall be obtained by linear interpolation between lines I and II.

(b). Where the effective length of a forecastle is more than 0.4 L, the percentages shall be obtained from line II.

(c). Where the effective length of a forecastle is less than 0.07 L, the above percentages shall be reduced by:

5(0.07L - f)/0.07L

where
f is the effective length of the forecastle.

Regulation 38 - *Sheer*

General

(1). The sheer shall be measured from the deck at side to a line of reference drawn parallel to the keel through the sheer line amidships.

(2). In ships designed with a rake of keel, the sheer shall be measured in relation to a reference line drawn parallel to the design load waterline.

(3). In flush deck ships and in ships with detached superstructures the sheer shall be measured at the freeboard deck.

(4). In ships with topsides of unusual form in which there is a step or break in the topsides, the sheer shall be considered in relation to the equivalent depth amidships.

(5). In ships with a superstructure of standard height which extends over the whole length of the freeboard deck, the sheer shall be measured at the superstructure deck. Where the height exceeds the standard the least difference (Z) between the actual and standard heights shall be added to each end ordinate. Similarly, the intermediate ordinates at distances of L and L from each perpendicular shall be increased by 0.444 Z and 0.111 Z respectively.

(6). Where the deck of an enclosed superstructure has at least the same sheer as the exposed freeboard deck, the sheer of the enclosed portion of the freeboard deck shall not be taken into account.

(7). Where an enclosed poop or forecastle is of standard height with greater sheer than that of the freeboard deck, or is of more than standard height, an addition to the sheer of the freeboard deck shall be made as provided in paragraph (12) of this Regulation.

Standard Sheer Profile

(8). The ordinates of the standard sheer profile are given in the following table:

Standard Sheer Profile

(Where L is in metres)

	Station	Ordinate (in millimetres)	Factor
After half	After Perpendicular	25	1
	L from A.P.	11.1	3
	L from A.P.	2.8	3
	Amidships	0	1
Forward half	Amidships	0	1
	L from F.P.	5.6	3
	L from F.P.	22.2	3
	Forward Perpendicular	50	1

Standard Sheer Profile

(Where L is in feet)

	Station	Ordinate (in inches)	Factor
After half	After Perpendicular	0.1 L+10	1
	L from A.P.	0.0444 L+4.44	3
	L from A.P.	0.0111 L+1.11	3
	Amidships	0	1
Forward half	Amidships	0	1
	L from F.P.	0.0222 L+2.22	3

	L from F.P.	0.0888	L+8.88	3
	Forward Perpendicular	0.2	L+20	1

Measurement of Variation from Standard Sheer Profile

(9). Where the sheer profile differs from the standard, the four ordinates of each profile in the forward or after half shall be multiplied by the appropriate factors given in the table of ordinates. The difference between the sums of the respective products and those of the standard divided by 8 measures the deficiency or excess of sheer in the forward or after half. The arithmetical mean of the excess or deficiency in the forward and after halves measures the excess or deficiency of sheer.

(10). Where the after half of the sheer profile is greater than the standard and the forward half is less than the standard, no credit shall be allowed for the part in excess and deficiency only shall be measured.

(11). Where the forward half of the sheer profile exceeds the standard, and the after portion of the sheer profile is not less than 75 per cent of the standard, credit shall be allowed for the part in excess; where the after part is less than 50 per cent of the standard no credit shall be given for the excess sheer forward. Where the after sheer is between 50 per cent and 75 per cent of the standard, intermediate allowances may be granted for excess sheer forward.

(12). Where sheer credit is given for a poop or forecastle the following formula shall be used:

$$s = (y/3)(L'/L)$$

where
s = sheer credit, to be deducted from the deficiency or added to the excess of sheer,

y = difference between actual and standard height of super-structure at the end of sheer,

L' = mean enclosed length of poop or forecastle up to a maximum length of 0.5 L,

L = length of ship as defined in Regulation 3 (1) of this Annex.

The above formula provides a curve in the form of a parabola tangent to the actual sheer curve at the freeboard deck and intersecting the end ordinate at a point below the superstructure deck a distance equal to the standard height of a superstructure. The superstructure deck shall not be less than standard height above this curve at any point. This curve shall be used in determining the sheer profile for forward and after halves of the ship.

Correction for Variations from Standard Sheer Profile

(13). The correction for sheer shall be the deficiency or excess of sheer (see paragraphs (9) to (11) inclusive of this Regulation), multiplied by

$$0.75 - S/2L$$

where
S is the total length of enclosed superstructures.

Addition for Deficiency in Sheer

(14). Where the sheer is less than the standard, the correction for deficiency in sheer (see paragraph (13) of this Regulation) shall be added to the freeboard.

Deduction for Excess Sheer

(15). In ships where an enclosed superstructure covers 0.1 L before and 0.1 L abaft amidships, the correction for excess of sheer as calculated under the provisions of paragraph (13) of this Regulation shall be deducted from the freeboard; in ships where no enclosed superstructure covers amidships, no deduction shall be made from the freeboard; where an enclosed superstructure covers less than 0.1 L before and 0.1 L abaft amidships, the deduction shall be obtained by linear interpolation. The maximum deduction for excess sheer shall be at the rate of 125 millimetres per 100 metres of length (1½ inches per 100 feet of length).

Regulation 39 - *Minimum Bow Height*

(1). The bow height defined as the vertical distance at the forward perpendicular between the waterline corresponding to the assigned summer freeboard and the designed trim and the top of the exposed deck at side shall be not less than:

for ships below 250 metres in length,

$$56\ L(1 - L/500)1.36/(Cb + 0.68)\ \text{millimetres};$$

for ships of 250 metres and above in length,

$$7000 \times [1.36/(Cb + 0.68)]\ \text{millimetres};$$

where L is the length of the ship in metres,
Cb is the block coefficient which is to be taken as not less than 0.68.or,

for ships below 820 feet in length,

$$0.672L(1 - L/1640)1.36/(Cb + 0.68)\ \text{inches}$$

for ships of 820 feet and above in length,

$$275.6 \times [1.36/(Cb + 0.68)]\ \text{inches}$$

where
L is the length of the ship in feet,

C_b is the block coefficient which is to be taken as not less than 0.68

(2). Where the bow height required in paragraph (1) of this Regulation is obtained by sheer, the sheer shall extend for at least 15 per cent of the length of the ship measured from the forward perpendicular. Where it is obtained by fitting a superstructure, such superstructure shall extend from the stem to a point at least 0.07 L abaft the forward perpendicular, and it shall comply with the following requirements:

> *(a)*. for ships not over 100 metres (328 feet) in length it shall be enclosed as defined in Regulation 3 (10), and
>
> *(b)*. for ships over 100 metres (328 feet) in length it need not comply with Regulation 3 (10) but shall be fitted with closing appliances to the satisfaction of the Surveyor General.

(3). Ships which, to suit exceptional operational requirements, cannot meet the requirements of paragraphs (1) and (2) of this Regulation may be given special consideration by the Surveyor General

Regulation 40 - *Minimum Freeboards*

Summer Freeboard

(1). The minimum freeboard in summer shall be the freeboard derived from the tables in Regulation 28 as modified by the corrections in Regulations 27, as applicable, 29, 30, 31, 32, 37, 38 and, if applicable, 39.

(2). The freeboard in salt water, as calculated in accordance with paragraph (1) of this Regulation, but without the correction for deck line, as provided by Regulation 32, shall not be less than 50 millimetres (2 inches). For ships having in position 1 hatchways with covers which do not comply with the requirements of Regulations 15 (7), 16 or 26, the freeboard shall be not less than 150 millimetres (6 inches).

Tropical Freeboard

(3). The minimum freeboard in the Tropical Zone shall be the freeboard obtained by a deduction from the summer freeboard of one forty-eighth of the summer draught measured from the top of the keel to the centre of the ring of the load line mark.

(4). The freeboard in salt water, as calculated in accordance with the paragraph (3) of this Regulation, but without the correction for deck line, as provided by Regulation 32, shall not be less than 50 millimetres (2 inches). For ships having in position 1 hatchways with covers which do not comply with the requirements of Regulations 15 (7), 16 or 26, the freeboard shall be not less than 150 millimetres (6 inches).

Winter Freeboard

(5). The minimum freeboard in winter shall be the freeboard obtained by an addition to the summer freeboard of one forty-eighth of summer draught, measured from the top of the keel to the centre of the ring of the load line mark.

Winter North Atlantic Freeboard

(6). The minimum freeboard for ships of not more than 100 metres (328 feet) in length, which enter any part of the North Atlantic defined in Regulation 52 (Annex II) during the winter seasonal period, shall be the winter freeboard plus 50 millimetres (2 inches). For other ships, the Winter North Atlantic Freeboard shall be the winter freeboard.

Fresh Water Freeboard

(7). The minimum freeboard in fresh water of unit density shall be obtained by deducting from the minimum freeboard in salt water:

Δ/40T centimetres (inches)

where
Δ = displacement in salt water in tons at the summer load waterline,

T = tons per centimetre (inch) immersion in salt water at the summer load waterline.

(8). Where the displacement at the summer load waterline cannot be certified, the deduction shall be one forty-eighth of summer draught, measured from the top of the keel to the centre of the ring of the load line mark

Chapter IV - Special Requirements for Ships Assigned Timber Freeboards

Regulation 41 - *Application of this Chapter*

Regulations 42 to 45 inclusive apply only to ships to which timber load lines are assigned

Regulation 42 - *Definitions*

(1). Timber Deck Cargo. The term "timber deck cargo" means a cargo of timber carried on an uncovered part of a freeboard or superstructure deck. The term does not include wood pulp or similar cargo.

(2). Timber Load Line. A timber deck cargo may be regarded as giving a ship a certain additional buoyancy and a greater degree of protection against the sea. For that reason, ships carrying a timber deck cargo may be granted a reduction of freeboard calculated according to the provisions of Regulation 45 and marked on the ship's side in accordance with the provisions of Regulation 6 (3) and (4). However, in order that such special freeboard may be granted and used, the timber deck cargo shall comply with certain conditions which are laid down in Regulation 44, and the ship itself shall also comply with certain conditions relating to its construction which are set out in Regulation 43.

Regulation 43 - *Construction of Ship*

Superstructure

(1). Ships shall have a forecastle of at least standard height and a length of at least 0.07 L. In addition, if the ship is less than 100 metres (328 feet) in length, a poop of at least standard height, or a raised quarter deck with either a deckhouse or a strong steel hood of at least the same total height shall be fitted aft.

Double Bottom Tanks

(2). Double bottom tanks where fitted within the midship half length of the ship shall have adequate watertight longitudinal subdivision.

Bulwarks

(3). The ship shall be fitted either with permanent bulwarks at least 1 metre (39½ inches) in height, specially stiffened on the upper edge and supported by strong bulwark stays attached to the deck and provided with necessary freeing ports, or with efficient rails of the same height and of specially strong construction.

Regulation 44 - *Stowage*

General

(1). Openings in the weather deck over which cargo is stowed shall be securely closed and battened down. The ventilators shall be efficiently protected.

(2). Timber deck cargo shall extend over at least the entire available length which is the total length of the well or wells between superstructures. Where there is no limiting superstructure at the after end, the timber shall extend at least to the after end of the aftermost hatchway. The timber shall be stowed as solidly as possible to at least the standard height of the superstructure.

(3). On a ship within a seasonal winter zone in winter, the height of the deck cargo above the weather deck shall not exceed one-third of the extreme breadth of the ship.

(4). The timber deck cargo shall be compactly stowed, lashed and secured. It shall not interfere in any way with the navigation and necessary work of the ship.

Uprights

(5). Uprights, when required by the nature of the timber, shall be of adequate strength considering the breadth of the ship; the spacing shall be suitable for the length and character of timber carried, but shall not exceed 3 metres (9.8 feet). Strong angles or metal sockets or equally efficient means shall be provided for securing the uprights.

Lashings

(6). Timber deck cargo shall be efficiently secured throughout its length by independent over-all lashings spaced not more than 3 metres (9.8 feet) apart. Eye plates for these lashings shall be efficiently attached to the sheer strake or to the deck stringer plate at intervals of not more than 3 metres (9.8 feet). The distance from an end bulkhead of a superstructure to the first eye plate shall be not more than 2 metres (6.6 feet). Eye plates and lashings shall be provided 0.6 metres (23½ inches) and 1.5 metres (4.9 feet) from the ends of timber deck cargoes where there is no bulkhead.

(7). Lashings shall be not less than 19 millimetres (¾ inch) close link chain or flexible wire rope of equivalent strength, fitted with sliphooks and turnbuckles, which shall be accessible at all times. Wire rope lashings shall have a short length of long link chain to permit the length of lashings to be regulated.

(8). When timber is in lengths less than 3.6 metres (11.8 feet) the spacing of the lashings shall be reduced or other suitable provisions made to suit the length of timber.

(9). All fittings required for securing the lashings shall be of strength corresponding to the strength of the lashings.

Stability

(10). Provision shall be made for a safe margin of stability at all stages of the voyage, regard being given to additions of weight, such as those due to absorption of water and icing and to losses of weight such as those due to consumption of fuel and stores.

Protection of Crew, Access to Machinery Spaces, etc.

(11). In addition to the requirements of Regulation 25 (5) of this Annex guard rails or life lines spaced not more than 330 millimetres (13 inches) apart vertically shall be provided on each side of the deck cargo to a height of at least 1 metre (39½ inches) above the cargo.

Steering Arrangements

(12). Steering arrangements shall be effectively protected from damage by cargo and, as far as practicable, shall be accessible. Efficient provision shall be made for steering in the event of a breakdown in the main steering arrangements

Regulation 45 - *Computation for Freeboard*

(1). The minimum summer freeboards shall be computed in accordance with Regulations 27 (5), 27 (6), 27 (11), 28, 29, 30, 31, 32, 37 and 38, except that Regulation 37 is modified by substituting the following percentages for those given in Regulation 37:

	Total Effective Length of Superstructures										
	0	0.1 L	0.2 L	0.3 L	0.4 L	0.5 L	0.6 L	0.7 L	0.8 L	0.9 L	1.0 L
Percentage of deduction for all types of superstructure	20	31	42	53	64	70	76	82	88	94	100

Percentages at intermediate lengths of superstructures shall be obtained by linear interpolation.

(2). The Winter Timber Freeboard shall be obtained by adding to the Summer Timber Freeboard one thirty-sixth of the moulded summer timber draught.

(3). The Winter North Atlantic Timber Freeboard shall be the same as the Winter North Atlantic Freeboard prescribed in Regulation 40 (6).

(4). The Tropical Timber Freeboard shall be obtained by deducting from the Summer Timber Freeboard one forty-eighth of the moulded summer timber draught.

(5). The Fresh Water Timber Freeboard shall be computed in accordance with Regulation 40 (7) based on the summer timber load waterline

Annex II - Zones, Areas and Seasonal Periods
The zones and areas in this Annex are, in general, based on the following criteria:

Summer - not more than 10 percent winds of force 8 Beaufort (34 knots) or more.

Tropical - not more than 1 percent winds of force 8 Beaufort (34 knots) or more. Not more than one tropical storm in 10 years in an area of 5° square in any one separate calendar month.

In certain special areas, for practical reasons, some degree of relaxation has been found acceptable.

A chart is attached to this Annex to illustrate the zones and areas defined below.

Chart 1. Chart of Zones and Seasonal Areas

Regulation 46 - *Northern Winter Seasonal Zones and Area*

(1). North Atlantic Winter Seasonal Zones I and II

(a). The North Atlantic Winter Seasonal Zone I lies within the meridian of longitude 50°W from the coast of Greenland to latitude 45°N, thence the parallel of latitude 45°N to longitude 15°W, thence the meridian of longitude 15°W to latitude 60°N, thence the parallel of latitude 60°N to the Greenwich Meridian, thence this meridian northwards.

Seasonal periods:

WINTER: 16 October to 15 April

SUMMER: 16 April to 15 October

(b). The North Atlantic Winter Seasonal Zone II lies within the meridian of longitude 68°30'W from the coast of the United States to latitude 40°N, thence the rhumb line to the point latitude 36°N, longitude 73°W, thence the parallel of latitude 36°N to longitude 25°W and thence the rhumb line to Cape Toriñana.

Excluded from this zone are the North Atlantic Winter Seasonal Zone I, the North Atlantic Winter Seasonal Area and the Baltic Sea bounded by the parallel of latitude of The Skaw in the Skagerrak.

Seasonal periods:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October

(2). North Atlantic Winter Seasonal Area

The boundary of the North Atlantic Winter Seasonal Area is-

the meridian of longitude 68°30'W from the coast of the United States to latitude 40°N, thence the rhumb line to the southernmost intersection of the meridian of longitude 61°W with the coast of Canada and thence the east coasts of Canada and the United States.

Seasonal periods:

For ships over 100 metres (328 feet) in length:

WINTER: 16 December to 15 February

SUMMER: 16 February to 15 December

For ships of 100 metres (328 feet) and under in length:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October

(3). North Pacific Winter Seasonal Zone

The southern boundary of the North Pacific Winter Seasonal Zone is-

the parallel of latitude 50°N from the east coast of the USSR to the west coast of Sakhalin, thence the west coast of Sakhalin to the southern extremity of Cape Kril'on, thence the rhumb line to Wakkanai, Hokkaido, Japan, thence the east and south coasts of Hokkaido to longitude 145°E, thence the meridian of longitude 145°E to latitude 35°N, thence the parallel of latitude 35°N to longitude 150°W and thence the rhumb line to the southern extremity of Dall Island, Alaska.

Seasonal periods:

WINTER: 16 October to 15 April

SUMMER: 16 April to 15 October

Regulation 47 - *Southern Winter Seasonal Zone*

The northern boundary of the Southern Winter Seasonal Zone is-

the rhumb line from the east coast of the American continent at Cape Tres Puntas to the point latitude 34°S, longitude 50°W, thence the parallel of latitude 34°S to longitude 17°E, thence the rhumb line to the point latitude 35°10'S, longitude 20°E, thence the rhumb line to the point latitude 34°S, longitude 28°E, thence along the rhumb line to the point latitude 35°30'S; longitude 118°E, and thence the rhumb line to Cape Grim on the northwest coast of Tasmania; thence along the north and east coasts of Tasmania to the southernmost point of Bruny Island, thence the rhumb line to Black Rock Point on Stewart Island, thence the rhumb line to the point latitude 47°S, longitude 170°E, thence along the rhumb line to the point latitude 33°S, longitude 170°W, and thence the parallel of latitude 33°S to the west coast of the American continent.

Seasonal periods:

WINTER: 16 April to 15 October

SUMMER: 16 October to 15 April

Regulation 48 - *Tropical Zone*

(1). Northern Boundary of the Tropical Zone

The northern boundary of the Tropical Zone is-

the parallel of latitude 13°N from the east coast of the American continent to longitude 60°W, thence the rhumb line to the point latitude 10°N, longitude 58°W, thence the parallel of latitude 10°N to longitude 20°W, thence the meridian of longitude 20°W to latitude 30°N and thence the parallel of latitude 30°N to the west coast of Africa; from the east coast of Africa the parallel of latitude 8°N to longitude 70°E, thence the meridian of longitude 70°E to latitude 13°N, thence the parallel of latitude 13°N to the west coast of India; thence the south coast of India to latitude 10°30'N on the east coast of India, thence the rhumb line to the point latitude 9°N, longitude 82°E, thence the meridian of longitude 82°E to latitude 8°N, thence the parallel of latitude 8°N to the west coast of Malaysia, thence the coast of South-East Asia to the east coast of Vietnam at latitude 10°N, thence the parallel of latitude 10°N to longitude 145°E, thence the meridian of longitude 145°E to latitude 13°N and thence the parallel of latitude 13°N to the west coast of the American continent.

Saigon is to be considered as being on the boundary line of the Tropical Zone and the Seasonal Tropical Area.

(2). Southern Boundary of the Tropical Zone

The southern boundary of the Tropical Zone is-

the rhumb line from the Port of Santos, Brazil, to the point where the meridian of longitude 40°W intersects the Tropic of Capricorn; thence the Tropic of Capricorn to the west coast of Africa; from the east coast of Africa the parallel of latitude 20°S to the west coast of Madagascar, thence the west and north coasts of Madagascar to longitude 50°E, thence the meridian of longitude 50°E to latitude 10°S, thence the parallel of latitude 10°S to longitude 98°E, thence the rhumb line to Port Darwin, Australia, thence the coasts of Australia and Wessel Island eastwards to Cape Wessel, thence the parallel of latitude 11°S to the west side of Cape York; from the east side of Cape York the parallel of latitude 11°S to longitude 150°W, thence the rhumb line to the point latitude 26°S, longitude 75°W, and thence the rhumb line to the west coast of the American continent at latitude 30°S.

Coquimbo and Santos are to be considered as being on the boundary line of the Tropical and Summer Zones.

(3). Areas to be included in the Tropical Zone

The following areas are to be treated as included in the Tropical Zone-

(a). The Suez Canal, the Red Sea and the Gulf of Aden, from Port Said to the meridian of longitude 45°E.

Aden and Berbera are to be considered as being on the boundary line of the Tropical Zone and the Seasonal Tropical Area.

(b). The Persian Gulf to the meridian of longitude 59°E.

(c). The area bounded by the parallel of latitude 22°S from the east coast of Australia to the Great Barrier Reef, thence the Great Barrier Reef to latitude 11°S. The northern boundary of the area is the southern boundary of the Tropical Zo

Regulation 49 - *Seasonal Tropical Areas*

The following are Seasonal Tropical Areas:

(1). In the North Atlantic

An area bounded-

on the north by the rhumb line from Cape Catoche, Yucatan, to Cape San Antonio, Cuba, the north coast of Cuba to latitude 20°N and thence the parallel of latitude 20°N to longitude 20°W;

on the west by the coast of the American continent;

on the south and east by the northern boundary of the Tropical Zone.

Seasonal periods:

TROPICAL: 1 November to 15 July

SUMMER: 16 July to 31 October

(2). In the Arabian Sea

An area bounded-

on the west by the coast of Africa, the meridian of longitude 45°E in the Gulf of Aden, the coast of South Arabia and the meridian of longitude 59°E in the Gulf of Oman;

on the north and east by the coasts of Pakistan and India;

on the south by the northern boundary of the Tropical Zone.

Seasonal periods:

TROPICAL: 1 September to 31 May

SUMMER: 1 June to 31 August

(3). In the Bay of Bengal

The Bay of Bengal north of the northern boundary of the Tropical Zone.

Seasonal periods:

TROPICAL: 1 December to 30 April

SUMMER: 1 May to 30 November

(4). In the South Indian Ocean

(a). An area bounded-

on the north and west by the southern boundary of the Tropical Zone and the east coast of Madagascar;

on the south by the parallel of latitude 20°S;

on the east by the rhumb line from the point latitude 20°S, longitude 50°E, to the point latitude 15°S, longitude 51°30'E, and thence by the meridian of longitude 51°30'E to latitude 10°S

Seasonal periods:

TROPICAL: 1 April to 30 November

SUMMER: 1 December to 31 March

(b). An area bounded-

on the north by the southern boundary of the Tropical Zone;

on the east by the coast of Australia;

on the south by the parallel of latitude 15°S from longitude 51°30'E, to longitude 120°E and thence the meridian of longitude 120°E to the coast of Australia;

on the west by the meridian of longitude 51°30'E.

Seasonal periods:

TROPICAL: 1 May to 30 November

SUMMER: 1 December to 30 April

(5). In the China Sea

An area bounded-

on the west and north by the coasts of Viet-Nam and China from latitude 10°N to Hong Kong;

on the east by the rhumb line from Hong Kong to the Port of Sual (Luzon Island) and the west coasts of the Islands of Luzon, Samar and Leyte to latitude 10°N;

on the south by the parallel of latitude 10°N.

Hong Kong and Sual are to be considered as being on the boundary of the Seasonal Tropical Area and Summer Zone.

Seasonal periods:

TROPICAL: 21 January to 30 April

SUMMER: 1 May to 20 January

(6). In the North Pacific

(a). An area bounded-

on the north by the parallel of latitude 25°N;

on the west by the meridian of longitude 160°E;

on the south by the parallel of latitude 13°N;

on the east by the meridian of longitude 130°W.

Seasonal periods:

TROPICAL: 1 April to 31 October

SUMMER: 1 November to 31 March

(b). An area bounded-

on the north and east by the west coast of the American continent;

on the west by the meridian of longitude 123°W from the coast of the American continent to latitude 33°N and by the rhumb line from the point latitude 33°N, longitude 123°W, to the point latitude 13°N, longitude 105°W;

on the south by the parallel of latitude 13°N.

Seasonal periods:

TROPICAL: 1 March to 30 June and 1 November to 30 November

SUMMER: 1 July to 31 October and 1 December to 28/29 February

(7). In the South Pacific

(a). The Gulf of Carpentaria south of latitude 11°S.

Seasonal periods:

TROPICAL: 1 April to 30 November

SUMMER: 1 December to 31 March

(b). An area bounded-

on the north and east by the southern boundary of the Tropical Zone;

on the south by the Tropic of Capricorn from the east coast of Australia to longitude 150°W, thence by the meridian of longitude 150°W, to latitude 20°S and thence by the parallel of latitude 20°S to the point where it intersects the southern boundary of the Tropical Zone;

on the west by the boundaries of the area within the Great Barrier Reef included in the Tropical Zone and by the east coast of Australia.

Seasonal periods:

TROPICAL: 1 April to 30 November

SUMMER: 1 December to 31 March

Regulation 50 - *Summer Zones*

The remaining areas constitute the Summer Zones.

However, for ships of 100 metres (328 feet) and under in length, the area bounded-

on the north and west by the east coast of the United States;

on the east by the meridian of longitude 68°30'W from the coast of the United States to latitude 40°N and thence by the rhumb line to the point latitude 36°N, longitude 73°W;

on the south by the parallel of latitude 36°N;

is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October

Regulation 51 - *Enclosed Seas*

(1). Baltic Sea

This sea bounded by the parallel of latitude of The Skaw in the Skagerrak is included in the Summer Zones.

However, for ships of 100 metres (328 feet) and under in length, it is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October

(2). Black Sea

This sea is included in the Summer Zones.

However, for ships of 100 metres (328 feet) and under in length, the area north of latitude 44°N is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 December to 28/29 February

SUMMER: 1 March to 30 November

(3). Mediterranean

This sea is included in the Summer Zones.

However, for ships of 100 metres (328 feet) and under in length, the area bounded-

on the north and west by the coasts of France and Spain and the meridian of longitude 3°E from the coast of Spain to latitude 40°N;

on the south by the parallel of latitude 40°N from longitude 3°E to the west coast of Sardinia;

on the east by the west and north coasts of Sardinia from latitude 40°N to longitude 9°E, thence by the meridian of longitude 9°E to the south coast of Corsica, thence by the west and north coasts of Corsica to longitude 9°E and thence by the rhumb line to Cape Sicié;

is a Winter Seasonal Area.

Seasonal periods:

WINTER: 16 December to 15 March

SUMMER: 16 March to 15 December

(4). Sea of Japan

This sea south of latitude 50°N is included in the Summer Zones.

However, for ships of 100 metres (328 feet) and under in length, the area between the parallel of latitude 50°N and the rhumb line from the east coast of Korea at latitude 38°N to the west coast of Hokkaido, Japan, at latitude 43°12'N is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 December to 28/29 February

SUMMER: 1 March to 30 November

Regulation 52 - *The Winter North Atlantic Load Line*

The part of the North Atlantic referred to in Regulation 40 (6) (Annex I) comprises:

(a). that part of the North Atlantic Winter Seasonal Zone II which lies between the meridians of 15°W and 50°W;

(b). the whole of the North Atlantic Winter Seasonal Zone I, the Shetland Islands to be considered as being on the boundary

Annex III - Certificates

Certificate 1 International Load Line Certificate, 1966

INTERNATIONAL LOAD LINE CERTIFICATE (1966)

(Official seal)

Issued under the provisions of the International Convention on Load Lines, 1966, under the authority of the Government of

(full official designation of the country)

by (full official designation of the competent person or organization

recognized under the provisions of the International Convention

on Load Lines, 1966)

Name of Ship	Distinctive Number or Letters	Port of Registry	Length (L) as defined in Regulation 3

Freeboard assigned as:

A new ship see footnote

An existing ship see footnote

Type of ship

Type 'A' see footnote

Type 'B' see footnote

Type 'B' with reduced freeboard see footnote

Type 'B' with increased freeboard see footnote

	Freeboard from deck line	Load line
Tropical	..... mm. (inches) (T)	..... mm. (inches) above (S)
Summer	..... mm. (inches) (S)	Upper edge of line through centre of ring
Winter	..... mm. (inches) (W)	..... mm. (inches) below (S)
Winter North Atlantic	..... mm. (inches) (WNA)	..... mm. (inches) below (S)

Timber tropical	..... mm. (inches) (LT)	..... mm. (inches) above (LS)
Timber summer	..... mm. (inches) (LS)	..... mm. (inches) above (S)
Timber winter	..... mm. (inches) (LW)	..... mm. (inches) below (LS)
Timber winter North Atlantic	..... mm. (inches) (LWNA)	..... mm. (inches) below (LS)

NOTE:
Freeboards and load lines which are not applicable need not be entered on the certificate.

Allowance for fresh water for all freeboards other than timber ..... mm. (inches). For timber freeboards ..... mm. (inches).

The upper edge of the deck line from which these freeboards are measured is ..... mm. (inches) ..... deck at side.

Date of initial or periodical survey .....

This is to certify that this ship has been surveyed and that the freeboards have been assigned and load lines shown above have been marked in accordance with the International Convention on Load Lines, 1966.

This certificate is valid until ....., subject to periodical inspections in accordance with MSN 50/08.

Issued at .....

(Place of issue of certificate)

..... 19 ....

(Date of issue) (Signature of official issuing the certificate)

and/or

(Seal of issuing authority)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

.....

(Signature)

NOTES:
1. When a ship departs from a port situated on a river or inland waters, deeper loading shall be permitted corresponding to the weight of fuel and all other materials required for consumption between the point of departure and the sea.
2. When a ship is in fresh water of unit density the appropriate load line may be submerged by the amount of the fresh water allowance shown above. Where the density is other than unity, an allowance shall be made proportional to difference between 1.025 and the actual density.

Reverse of Certificate

This is to certify that at a periodical inspection required by MSN 05/08, this ship was found to comply with the relevant provisions of the Convention.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

The provisions of the Convention being fully complied with by this ship, the validity of this certificate is, in accordance with MSN 05/08, extended until .....

Place ..... Date .....

Signature and/or Seal of issuing authority.

Certificate 2 International Load Line Exemption Certificate

INTERNATIONAL LOAD LINE EXEMPTION CERTIFICATE

(Official seal)

Issued under the provisions of the International Convention on Load Lines, 1966, under the authority of the Government of

(full official designation of the country)

by (full official designation of the competent person or organization

recognized under the provisions of the International Convention

on Load Lines, 1966)

Name of Ship	Distinctive Number or Letters	Port of Registry

This is to certify that the above-mentioned ship is exempted from the provisions of the 1966 Convention, under the authority conferred by Article 6 (2)/Article 6 (4) [see footnote] of the Convention referred to above.

The provisions of the Convention from which the ship is exempted under Article 6 (2) are:

.....

.....

.....

The voyage for which exemption is granted under Article 6 (4) is:

From: .....

To: .....

Conditions, if any, on which the exemption is granted under either Article 6 (2) or Article 6 (4):

.....

.....

.....

This certificate is valid until ..... subject, where appropriate, to periodical inspections in accordance with MSN 05/08.

Issued at .....

(Place of issue of certificate)

..... 19 ....

(Date of issue) (Signature of official issuing the certificate)

and/or

(Seal of issuing authority)

If signed, the following paragraph is to be added:

The undersigned declares that he is duly authorized by the said Government to issue this certificate.

.....

(Signature)

Reverse of Certificate

This is to certify that this ship continues to comply with the conditions under which this exemption was granted.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

Place ..... Date .....

Signature and/or Seal of issuing authority.

This ship continues to comply with the conditions under which this exemption was granted and the validity of this certificate is, in accordance with MSN 05/08, extended until .....

Place ..... Date .....

Signature and/or Seal of issuing authority.

Recommendations

The following are the Recommendations adopted by the Conference

Recommendation 1 - *Denunciation of the International Convention respecting Load Lines, 1930*

The Conference recommends:

(1). that Governments should accept the International Convention on Load Lines, 1966, at as early a date as possible and that the Governments which become Parties to that Convention should denounce the International Convention respecting Load Lines, 1930, and should co-operate with one another with a view to ensuring that their respective denunciations become effective on a date two years after the date on which the 1966 Convention comes into force;

(2). that Governments denouncing the 1930 Convention should bear in mind the provisions of the 1966 Convention relating to existing ships, in particular Article 4 (4).

Recommendation 2 - *Ships not subject to the International Convention on Load Lines, 1966*

The Conference recommends that such regulations as may be made by any of the Contracting Governments relating to

(1). its new ships of less than 24 metres (79 feet) in length on international voyages;

(2). its existing ships of less than 150 tons gross engaged on international voyages;

(3). its ships engaged on national voyages of an exposed nature, embracing the same hazardous elements as are normally encountered on international voyages

should, so far as practicable and reasonable, be framed in accordance with the principles and provisions of the International Convention on Load Lines, 1966.

Recommendation 3 - *Minimum Freeboards for Fishing Vessels*

The Conference, having discussed the possibility of assigning load lines to fishing vessels, recommends that the Inter-Governmental Maritime Consultative Organization should pursue studies on the minimum freeboard for such vessels with a view to establishing recommended international standards for minimum freeboard of fishing vessels.

Recommendation 4 - *Consolidation of Conventions*

The Conference, recognizing the common aims of the International Convention for the Safety of Life at Sea, 1960 and the International Convention on Load Lines, 1966, concerning the safety of life and property at sea, recommends that the Inter-Governmental Maritime Consultative Organization should consider the relationship between the provisions of the two Conventions with a view to suggesting how they could be consolidated in a single international convention.

Recommendation 5 - *Boundaries between Inland Waters and the Sea*

The Conference recommends that each Contracting Government should make available to any other Contracting Government, on request, particulars of the boundaries between inland waters and the sea which it will use for the purposes of Article 12 (3) of the International Convention on Load Lines, 1966.