DRAFT

MINISTRY OF PORTS, SHIPPING AND WATERWAYS

NOTIFICATION

New Delhi, the_____ 2026

G.S.R. ---)- whereas, draft of the Merchant Shipping (Load Line) Rule, 2025 were published, as required by sub-section (1) of section 130 of the Merchant Shipping Act, 2025 (24 of 2025) vide G.S.R. _____ dated _____, inviting objections and suggestions from all persons likely to be affected thereby till the expiry of thirty days from the date of publication of the said notification in the Official Gazette;

And, whereas the copies of the said Gazette were made available to the public on the _____

And whereas ____ objection or suggestion has been received and considered on the said draft;

Now, therefore, in exercise of the powers conferred by section 130 of the Merchant Shipping Act, 2025 the Central Government hereby make the following rules, namely:-

PART I Preliminary

1. Short title, commencement and application:-

(1) These rules may be called the Merchant Shipping (Load Line) Rules, 2025.

(2) They shall come into force on the date of their publication in the Official Gazette.

(3) They shall apply to--

(a) every Indian ship, other than a ship of war, a fishing vessel, a pleasure yacht or a sailing vessel, wherever it is ;

(b) every ship other than an Indian ship, not being a ship of war, a fishing vessel, a pleasure yacht or a sailing vessel while it is at a port or place in India or within the territorial waters of India, which is—

(i) an existing ship of 150 tons gross or more; or

(ii) a new ship of 24 metres of more in length, provided that these rules shall not apply to any ship other than Indian ship by reason of its being

at a port or place in India or within the territorial waters of India if it would not have been at any such port or place but for the stress of weather or any other circumstances that neither the master nor the owner or charterer, if any, of the ship could have prevented or forestalled.

Provided that the requirements under these rules shall not apply in the case of ships the keel of which was laid or was at a similar stage of construction before the coming into force of these rules:

Provided further that such ships comply with the requirements specified in Merchant Shipping (Load Line) Rules, 2025 as amended, as in force and as applicable based on the construction of the vessel, before the coming into force of these rules.

2. Definition: - In these rules, unless the context otherwise requires,-

(1) "Act" means the Merchant Shipping Act, 2025 (24 of 2025) as amended from time to time;

(2) "amidship" means at the middle of the length (L);

(3) "approved" means approved by the Director General or by any other person authorized by Director General in this behalf;

(4) "Assigning Authority" means the Director General or any other person appointed by the Central Government to be the assigning authority for the purposes of these rules by a notification in the Official Gazette;

(5) "block co-efficient" or the symbol (C_b) means block co-efficient obtained by the formula

$$C_b = \Delta / (L.B.d_1)$$

where, Δ is volume of the moulded displacement of the ship, excluding bossing, in a ship with metal shell or, as the case may be, 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 ; d_1 is 85 per cent of the least moulded depth;

When calculating the block coefficient of a multi-hull craft, the full breadth (B) as defined in sub-rule (6) is to be used and not the breadth of a single hull.

(6) "breadth" or the symbol (B) means the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal

shell, or as the case may be, to the outer surface of the hull in a ship with a shell of any other material;

(7) “bridge” is a superstructure which does not extend to either the forward or after perpendicular.

(8) "depth for freeboard" or the symbol (D) –

(a) in relation to a ship other than these referred to in clause (b) means the moulded depth of the ship amidships plus the thickness of the free board deck stringer plate, where fitted, and

(b) in relation to a ship having a rounded gunwale with a radius greater than four percent of the breadth of the ship (B), or in relation to a ship having topsides of unusual form means: the depth for freeboard of a ship having midship section with vertical topsides and with the same round of beam and area of top side section equal to that provided by the actual midship section;

(9) "enclosed superstructure" means a superstructure with enclosing bulk heads of efficient construction, access openings in such bulkheads being fitted with ails and watertight doors and all other openings in sides and ends of such superstructures being fitted with efficient watertight means of closing but does not include a bridge or a poop fulfilling these requirements unless access is provided by which the crew can reach machinery and other working spaces within the bridge or poop by alternative means which are available for the purpose at all times when access openings in the bulkheads of the bridge or poop are closed;

(10) "existing ship" or "existing sailing vessel" means a ship or sailing vessel the keel of which was laid before the 21st day of July, 1968 ;

(11) "flush deck ship" means a ship which has no superstructures on a free board deck;

(12) "freeboard" means the distance measured vertically downwards amidships from the upper edge of the deckline described in rule 15 of these rules to the position at which the upper edge of the appropriate load line mark lies;

(13) "freeboard deck" means the deck from which the freeboard is assigned being either—

(a) the uppermost complete deck exposed to whether 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; or

(b) on the application of the owner and subject to the approval of the Director General, a deck lower than that described in clause (a), provided it is a complete and permanent deck continuous in the fore and aft direction at least between the machinery space and peak bulkheads and continuous athwartships.

(i) 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.

(ii) 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.

(iii) When a lower deck is designated as the freeboard deck, such deck as a minimum shall consist of suitably framed stringers at the ship sides and transversely at each watertight bulkhead which extends to the upper deck, within cargo spaces.

The width of these stringers shall not be less than can be conveniently fitted having regard to the structure and the operation of the ship. Any arrangement of stringers shall be such that structural requirement can also be met.

(c) Discontinuous freeboard deck, stepped freeboard deck.

(i) Where a recess in the freeboard deck extends to the sides of the ship and is in excess of one metre in length, 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

(ii) Where a recess in the freeboard deck does not extend to the sides of the ship, the upper part of the deck is taken as the freeboard deck.

(iii) Recesses not extending from side to side in a deck below the exposed deck, designated as the freeboard deck, may be disregarded, provided all openings in the weather deck are fitted with weather tight closing appliances.

(iv) Due regard shall be given to the drainage of exposed recesses and to free surface effects on stability.

(v) Provisions of sub-clause (i) through (iv) are not intended to apply to dredgers, hopper barges or other similar types of ships with large open holds, where each case requires individual consideration.

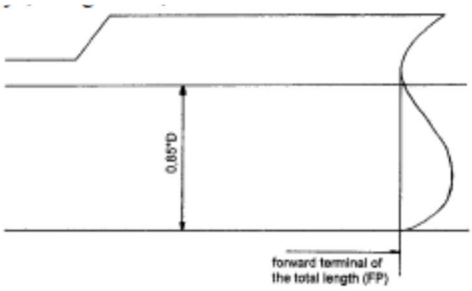
(14) “full superstructure” is a superstructure which, as a minimum, extends from the forward to the after perpendicular.

(15) “forecastle” is a superstructure which extends from the forward perpendicular aft to a point which is forward of the after perpendicular. The forecastle may originate from a point forward of the forward perpendicular.

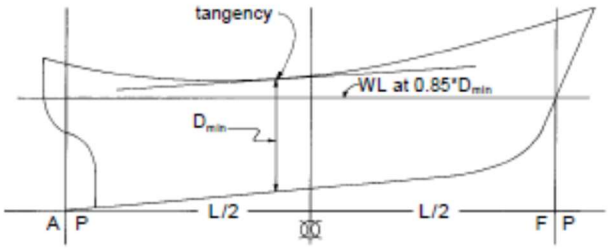
(16) "height of superstructure" means the least vertical height measured at side from the top of the superstructure deck beams to the top of the freeboard deck beams;

(17) "length" or the symbol (L) means ninety-six per cent of the total length on a water line at eighty-five per cent of the least moulded depth measured from top of the keel, or the length from the force side of the stem to the axis of the rudder stock on the water line if that be greater;

For ships without a rudder stock, the length (L) is to be taken as 96% of the waterline at 85% of the least moulded depth.



Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour



In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline at 85% of the least moulded depth Dmin, found by drawing a line parallel to the keel line of the vessel (including skeg) tangent to the moulded sheer line of the freeboard deck. The least moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side at the point of tangency.

(18) "length of a superstructure" means length of the part of the superstructure which lies within the length (L)

(19) "Merchant Shipping Notice" means a Notice described as such and issued by the Directorate.

(20) "moulded depth" in relation to a ship means the vertical distance measured form the top of the keel to the top of the freeboard deck beam a side, provided that, in the case of a wood or composite ship, it shall be measured from the lower edge of 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;

(a) in ships having rounded gunwale, it shall be measured to the point of intersection of the moulded lines of the deck and side plating, the lines extending as though the gunwale were of angular design;

(b) in ships 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 long a line parallel with the raised part of the deck.

(21) "new ship" or "new sailing vessel" means a ship or sailing vessel the keel of which was laid on or after the 21st day of July, 1968;

(22) "perpendiculars" means the forward and after perpendicular taken at the forward and the after end of the length.(L);

(23) “poop” is a superstructure which extends from the after perpendicular forward to a point which is aft of the forward perpendicular. The poop may originate from a point aft of the aft perpendicular.

(24) "Chief Ship Surveyor" means the Chief Ship Surveyor appointed by the Central Government;

(25) “raised quarterdeck” is a superstructure which extends forward from the after perpendicular, generally has a height less than a normal superstructure, and has an intact front bulkhead (sidescuttles of the non-

opening type fitted with efficient deadlights and bolted man hole covers). Where the forward bulkhead is not intact due to doors and access openings, the superstructure is then to be considered as a poop.

(26) "sailing vessel" includes all ships provided with sufficient sail area for navigation under sails along whether or not fitted with mechanical means of propulsion;

(27) "Schedule" means a Schedule appended to these rules;

(28) "superstructure" means a decked structure on the freeboard deck, extending from side to side plating not being inboard of the shell plating more than four per cent of the breadth (B), and includes a raised quarter deck;

(29) “superstructure deck” is a deck forming the upper boundary of a superstructure.

(30) “Surveying Authority" means a body of persons authorized under sub-section (1A) of Section 9 of the Act, to be surveyors.'

(31) "timber deck cargo" means a cargo of timber other than wood pulp or similar cargo carried on uncovered part of a freeboard or super- structure deck

(32) "type A ship" and "type B ship" means ships as interpreted in the First Schedule;

(33) "watertight" in relation to any part of ship below the freeboard deck means capable of preventing the passage in any direction of water under pressure or otherwise as the case may be having regard to the functional requirement of that part of the ship;

(34) "weathertight" in relation to any part of ship above the freeboard deck means that water cannot penetrate through that part into the ship under any condition of sea and weather encountered at sea.

(35) “well” is any area on the deck exposed to the weather, where water may be entrapped. Wells are considered to be deck areas bounded on two or more sides by deck structures.

PART II Surveys and Certificates

3. Application for Survey

(1) Application for the survey of a ship for the purpose of assignment of freeboard and for the issue of a load line certificate to the ship shall be made to the

Assigning Authority by or on behalf of the owner of the ship. The applicant shall furnish to the Assigning Authority as described hereunder such plans, drawings specifications and other documents and information relating to the design and construction of the ship as the Assigning Authority may require--

(a) the Chief Ship Surveyor on behalf of the Director General; and

(b) any other person appointed by the Central Government to be an Assigning Authority for the purposes of these rules by a notification published in the Official Gazette.

4. Load Line Surveys:

(1) After receipt of the application and the documents together with other relevant information required by rule 3, the Assigning Authority shall cause the ship to be surveyed by a surveyor with a view to ascertaining-

(a) whether the ship complies with such of the requirements of Part IV of these rules and the First Schedule; and

(b) such other data as may be necessary--

(i) for the assignment of freeboard to the ship in accordance with Part V of these rules and the Second Schedule; and

(ii) to enable the stability information to be supplied to the master of the ship pursuant to Part VI of these rules and the Third Schedule.

(2) In the course of survey of a ship pursuant to the provisions of sub-rule (1), the ship and any of its fittings shall be submitted to such tests as may, in the opinion of the Assigning Authority, be necessary to ascertain that the ship complies with the requirements of sub-rule (1). Any test pertaining to stability of a ship shall be subject to the requirements of rule 31.

(3) The owner or any other person on his behalf applying for the survey of the ship under rule 3, shall afford all necessary facilities for such survey and shall, at the request of the Assigning Authority, furnish, for the Assigning Authority's use and retention if necessary, such further documents and information as the Assigning Authority may require.

5. Report of Survey:-

(1) On completion of the survey, the Surveyor shall submit a report of survey to the Assigning Authority giving the results of the survey and his findings on the condition of the ship with reference to the requirements of rule 4.

(2) The report of survey shall be accompanied by the Record of Conditions of Assignment in the form set out in the Fourth Schedule complying with the requirements of rule 26 and the computations of freeboard complying with the requirement of Part V of these rules and the second Schedule.

(3) In the case of any ship which is required to comply with the requirements of Part I of the Third Schedule relating to stability the surveyor shall furnish to the Director General such information as may be necessary to determine whether the ship complies with these requirements.

6. Assignment of freeboards:-

(1) The Assigning Authority shall-

(a) if satisfied on scrutiny of report of survey that the ship complies with the applicable requirements of Part IV of these rules and the First schedule, and

(b) on receipt of an intimation from the Director General that it is satisfied that the ship complies with the requirements of Part VI of these rules and the Third Schedule relating to stability-

assign freeboard to the ship in accordance with Part V of these rules and second Schedule.

(2) On assignment of freeboards, the Assigning Authority shall furnish to the owner of the ship-

(a) particulars of freeboards so assigned;

(b) directions specifying-

(i) the load lines to be marked on the ship in accordance with the requirements of Part III of these rules;

(ii) the position in which those load lines, the deck line and the load line mark are to be so marked; and

(c) two copies of the Record of Conditions of Assignment.

7. Issue of Load Line Certificates and forms thereof:

(1) Subject to the provisions of rule 12, the Assigning Authority shall, on being satisfied that the ship has been duly marked in accordance with the directions given to the owner of the ship under rule 6, issue either an International Load Line Certificate (1966) or an India Load Line Certificate as may be required by section 316 of the Act, in the form set out for such certificates in the Fifth Schedule.

(2) Issue of certificate by another government

(a) **A contracting Government may, at the request of** Director General cause a ship to be surveyed and, if satisfied that the provisions of the present Convention are complied with, shall issue or authorize the issue of an International Load Line Certificate to the Ship in accordance with the International Load Line Convention 1966 as amended by its 88 Protocol.

(b) A copy of the certificate, a copy of the survey report used for computing the freeboard, and a copy of the computations shall be transmitted as early as possible to the Director General.

(c) A certificate so issued must contain a statement to the effect that it has been issued at the request of the Government of India, whose flag the ship is or will be flying and it shall have the same force and receive the same recognition as a certificate issued under rule 7

8. Duration of Certificate:-Every Load Line Certificate issued under these rules shall be valid until a date to be determined by the Assigning Authority not being a date more than five years after the date of completion of survey of the ship under rule 4. Such date shall be specified by the Assigning Authority in every certificate issued by it failing which the certificate shall not be deemed to be a valid certificate.

9. Extension of Load Line Certificate:-

(1) Where any ship, in respect of which a Load Line Certificate is in force, has been surveyed following an application made by the owner to issue of the fresh certificate to take effect on the expiry of the current certificate, the Assigning Authority or Surveying Authority may -

(a) if satisfied on scrutiny of survey that the ship complies with applicable requirements of Part V of these rules and of the First Schedule relating to conditions of assignment.

(b) On receipt of an intimation from the Director General or the assigning authority that the ship complies with the requirements of the Third Schedule relating to stability, extend the validity of the current certificates of the ship by a period not exceeding five months, if he considers that it is not reasonably practicable to issue a fresh certificate. In every such case, a fresh certificate shall be issued after the expiry of the extended date of validity of the current certificate.

(2) No such extension granted under sub-rule (1) shall have effect unless particulars of the date upto which the period of validity of the certificate is

extended, together with particulars of place at and date on which extension was granted, are endorsed by the Assigning Authority or Surveying Authority on the current certificate.

(3) The period of validity of a fresh certificate ultimately issued to a ship under sub-rule (1) shall not exceed five years from the date of completion of survey referred to in sub-rule (1).

10. Cancellation of Load Line Certificates:-

(1) Where the Director General is satisfied, whether by a report from an Assigning Authority or a Surveyor or otherwise, that ---

(a) the ship to which the certificate relates does not comply with the conditions of assignment, or

(b) the structural strength of the ship is lowered to such an extent as to render the ship unsafe, or

(c) information on the basis of which freeboards were assigned to the ship has proved to the incorrect in matters of material importance.

(d) the fittings and appliances mentioned in clause (1)(a) of rule 11 are not maintained in an effective condition.

(2) Where it comes to the notice of the Director General that ---

(a) the certificate of a ship is not endorsed as required by rule 11 ; or

(b) a new certificate is issued in respect of the ship; or

(c) the ship has ceased to be an Indian Ship within the meaning of the Act, it may, after giving the owner of the ship a reasonable opportunity of making his representation, cancel or cause to cancel any Load Line Certificate issued under these rules.

11. Periodical Inspection of Ships:-

(1) Every ship in respect of which a Load Line Certificate is in force shall be periodically inspected by a surveyor in accordance with the provisions of this rule in order to ensure that--

(a) the fittings and appliances for the protection of openings, the guard rails, the freeing ports and the means of access to crew's quarters in the ship are in an effective condition; and

(b) no changes have been made or taken place in the hull or superstructures of the ship which may render inaccurate any date on the basis of which freeboards and been assigned to the ship.

(2) Application for the periodical inspection shall be made by or on behalf of the owner of the ship to an Assigning Authority, who shall appoint a surveyor to carry out the inspection.

(3) The surveyor may, in the course of any such inspection, require such tests to be carried as in his opinion, may be necessary to establish that the ship complies with the requirements of sub-rule (1).

(4) Periodical inspections required by this rule shall be carried out annually within a period of nine to fifteen months commencing on the date three months before and concluding three months after each anniversary of the date of completion of the survey of the ship leading to the issue of its current Load Line Certificate:

(5) Provided that the Director General may, if it is satisfied that the circumstances so require permit the annual inspection to be carried out before or after the period specified therefore.

(6) The surveyor, if satisfied after inspection that the ship complies with the requirements of sub-rule (1), shall, in the space provided for this purpose in the Load Line Certificates, endorse a record of such inspection and certify---

(a) in the case of an International Load Line Certificate (1966), that the ship was found to comply with the relevant provisions of the Convention; and

(b) in the case of an India Load Line Certificate, that the ship was found to comply with the relevant provisions of these rules.

Every such endorsement shall be dated and signed by the surveyor carrying out the inspection, specifying the Assigning Authority on whose behalf the inspection was carried out.

12. Exemption and Exemption Certificate:--

(1) Where the Director General exempts any ship pursuant to the provisions of Section 316 of the Act, the Director General shall issue in respect of such ship an International Load Line Exemption Certificate in the form set out in the Fifth Schedule.

(2) Save in so far as the nature and terms of any such exemption require to the contrary the provisions of rules 1 to 6 and of rules 8 to 11 shall apply to any ship so exempted and to any exemption certificate so issued to any such ship in the like manner as they apply to any other ship except that--

(a) references in the aforesaid rules to Assigning Authority shall be deemed to be references to the Director General; and

(b) sub-rule (5) of rule 11 shall be deemed to have been substituted by the following, namely :-

"(5) the surveyor, if satisfied after inspection that the ship continues to comply with the conditions subject to which the exemption was granted shall endorse the exemption certificate to that effect in the space provided and date and sign the endorsement."

12A. The Director General may issue Merchant Shipping Notices for the purpose of clarification or for the application of the amendments to the Loadline Convention.

PART III Load Lines and Marks

13. Appropriate Marks :- For the purposes of this part, the expression "appropriate marks" in relation to a ship means the load lines required to be marked on the ship under clause (b) of sub-rule (2) of rule 6 and the deck-line and load line mark.

14. Marking:- The owner of a ship, on receipt from the Assigning Authority of particulars and directions referred to in sub-rule (2) of rule 6, shall cause the appropriate marks to be marked on each side of the ship in accordance with the said directions and requirements of this part.

15. Deck-line:-

(1) The deck-line shall consist of a horizontal line 300 millimetres in length and 25 millimetres in width. It shall be marked amidships on each side of the ship in accordance with the provisions of this rule so as to indicate the position of the freeboard deck.

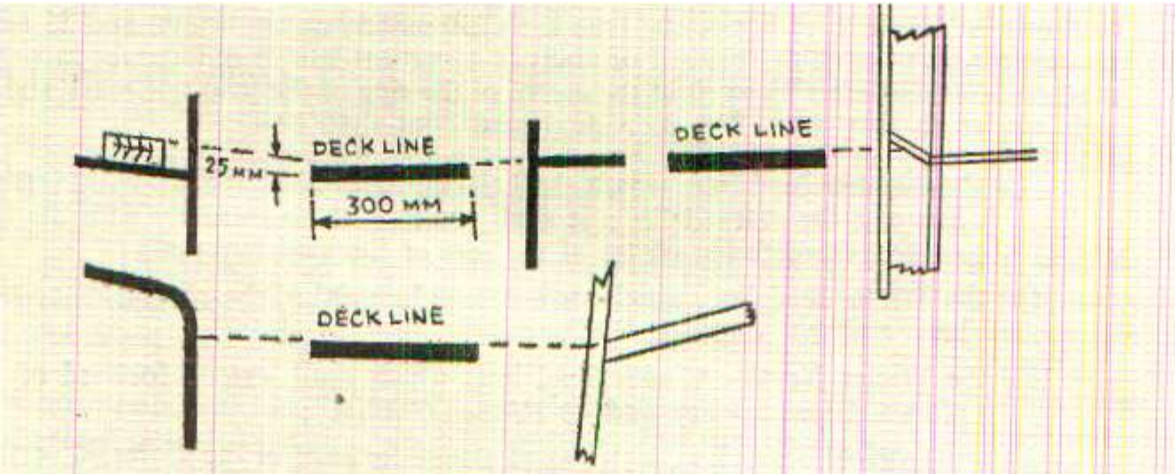


Fig. 1. Deck Line

(2) Subject to the provisions of sub-rule (3), the deck-line shall be marked in such a position on the side of the ship that its upper edge passes through the point amidships where the continuation outward--

(a) of the upper surface of the freeboard deck, or

(b) of any sheathing of the freeboard deck, intersects the outer surface of the shell of the ship as shown in figure 1.

(3) Where, in the opinion of the Assigning Authority, the design of the ship or any other circumstance renders it impracticable to mark the deck-line in accordance with the provisions of sub-rule (2), the Assigning Authority may, in the directions given under sub-rule (2) of rule 6 include a direction that the deck-line may be marked by reference to another point on the side of the ship which is as near as practicable to the position referred to in sub-rule (2). 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.

16. Load line mark : The load line mark shall consist , as shown in Figure 2, of a ring 300 millimetres in outside diameter and 25 millimetres wide, intersected by a horizontal line 450 millimetres long and 25 millimetres wide the upper edge of which passes through the center of the ring. The center of the ring shall be marked amidships vertically below the deck-line, so that except as otherwise provided in rule 29, the distance from the center of the ring to the upper edge of the deck-line is equal to the Summer freeboard assigned to the ship.

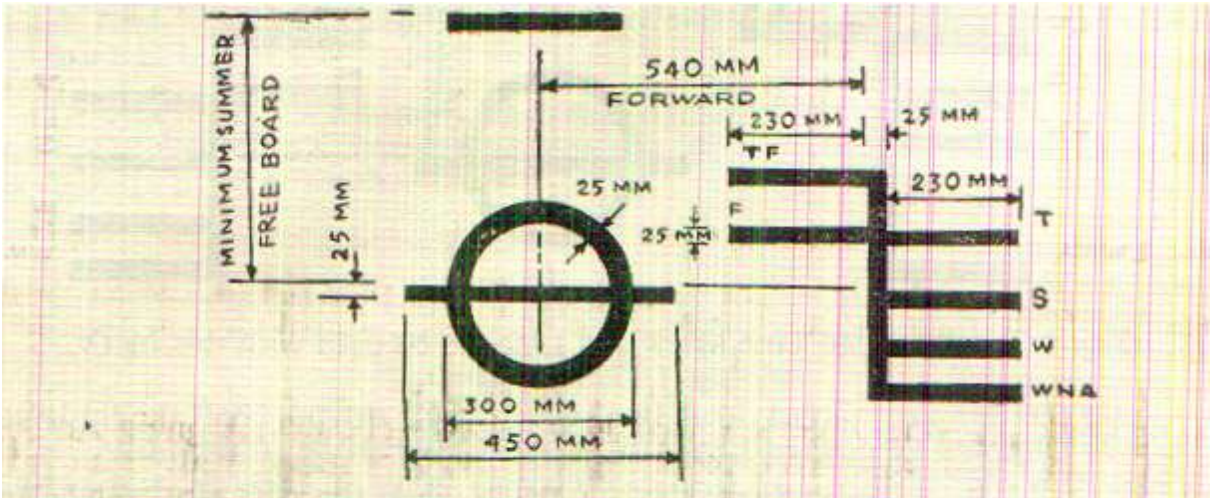


Fig. 2. Load Line Mark and lines to be used with this mark

17. Load lines :-

(1) Load lines as described in sub-rule (2) and rule 18 shall be deemed to indicate the maximum depth to which a ship marked therewith may be loaded in the circumstances described in the sixth Schedule in relation to appropriate load lines, zones, areas and seasonal periods.

(2) Except as otherwise provided in rule 18 and rule 29, load lines shall consist as shown in Figure 2 of horizontal lines each 230 milimetres in length and 25 millimetres in width extending forward or abaft of a vertical line 25 millimetres in width marked 540 millimetres forward of the center of the ring of the load line mark and at right angles to that line. The individual load lines shall be--

(a) the summer load line, which shall extend forward of the aforesaid vertical line and the marked "S". It shall correspond horizontally with the line passing through the center of the ring of the load line mark;

(b) the Winter load line, which shall extend forward of the aforesaid vertical line and be marked "W".

(c) the Winter North Atlantic load line, which shall extend forward of the aforesaid vertical line and be marked "WNA";

(d) the Tropical load line, which shall extend forward of the aforesaid vertical line and be marked "T"

(e) the fresh Water load line, which shall extend abaft the aforesaid vertical line and be marked "F";

(f) the Tropical fresh Water load line, which shall extend abaft the aforesaid vertical line and be marked "TF";

(3) The maximum depth of loading referred to in sub-rule (1) shall be the depth indicated by the upper edge of the appropriate load line described in sub-rule (2).

18. Timber load lines:-

(1) Timber load lines, as shown in figure 3, shall consist of horizontal lines of the dimensions specified in respect of such lines in rule 17, extending abaft or forward of a vertical line of the dimensions specified in respect of such a line in that rule, marked 540 millimetres abaft the center of the ring of load line mark and at right angles of that line. Individual timber Load Lines shall be as follows:-

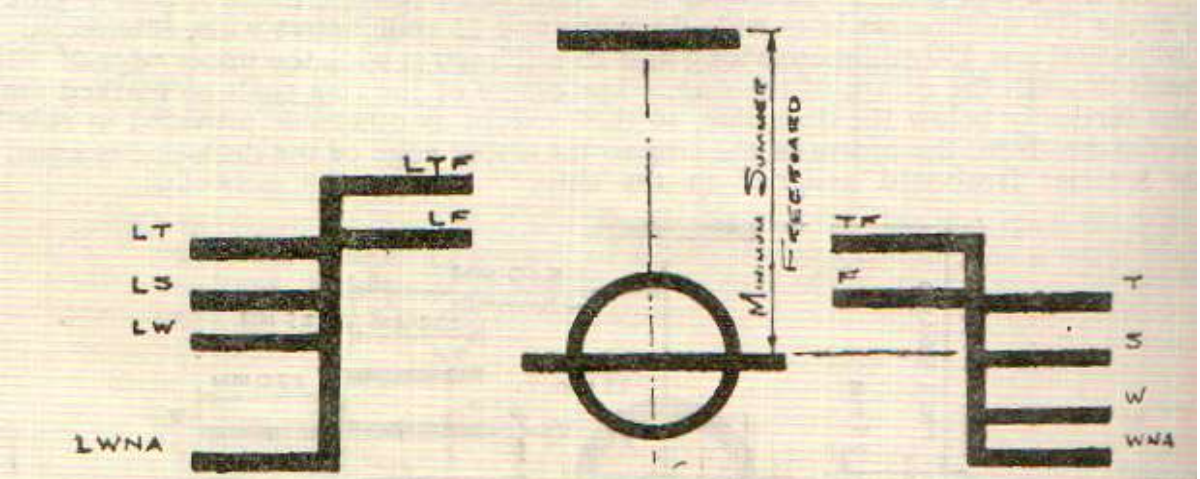


Fig. 3. Timber Load Line Mark and Lines to be used with this mark

(a) the Summer timber load line, which shall extend abaft the said vertical line and be marked LS;

(b) the Winter load line, which shall extend abaft the said vertical line and be marked LW;

(c) the Winter north atlantic timber load line which shall extend abaft the said vertical line and be marked LWNA;

(d) the Tropical timber load line, which shall extend abaft the said vertical line and be marked LT ;

(e) the Fresh water timber load line, which shall extend forward of the said vertical line and be marked LTF LF;

(f) the Tropical Fresh water timber load line, which shall extend forward of the said vertical line and be marked LLF LTF;

(2) The maximum depth of loading referred to in sub-rule (1) of rule 17 shall be the depth indicated by the upper edge of the appropriate timber load line.

19. Appropriate load line: - The appropriate load line in respect of a ship at any particular place and time shall be ascertained in accordance with the provisions of the Sixth Schedule.

20. Position of load lines:-Each load line required to be marked on a ship shall be marked in such a position of each side of the ship such that the distance measured vertically downwards from the upper edge of the deckline to the upper edge of the load line is equal to the freeboard assigned to the ship which is appropriate to that load line.

21. Methods of marking:-

(1) The appropriate marks shall be marked on each side of the ship in accordance with the requirements of sub-rules (2) and (3) in such a manner as to be plainly visible.

(2) If the sides of the ship are of metal, the appropriate marks shall be cut in, center punched or welded; if the sides of the ship are of wood, the marks shall be cut into the planking to a depth of not less than 3 millimetres; if the sides are of other materials to which the foregoing method of marking cannot be effectively applied, the marks shall be permanently affixed to the sides of the ship by bonding or some other effective method.

(3) The appropriate marks shall be painted in white or yellow if the background is dark, and in black if the background is light.

22. Authorisation of removal etc. of appropriate marks:- After the appropriate marks have been marked on a ship, such marks shall not be concealed, defaced or obliterated or they shall not be removed or altered except under the authority approval of the Assigning Authority.

23. Mark of assigning authority:-

(1) The mark of the Assigning Authority described in sub-rule (2) shall be marked on each side of the ship in a position alongside the load line mark either above the horizontal line forming part of that mark or above and below it.

(2) An Assigning Authority's mark shall consist of not more than four initials to identity the Authority's name, each measuring approximately 115 millimetres in height and 75 millimetres in width.

PART IV Conditions of Assignment

24. Assignment of freeboards:-

(1) Except as otherwise provided in sub-rules (2) and (3), every ship to which freeboards are to be assigned under these rules shall comply with the requirements applicable to it under Part I of the First Schedule.

(2) Every ship, being a ship of Type 'A' to which requirements of Part III of the First Schedule apply, every ship, being a ship of Type 'B' to which the requirements, of Part IV of the First Schedule apply or every ship, being a ship to be assigned with timber freeboards, to which the requirements of part V of the First Schedule apply shall comply with the requirements of the respective part of the First Schedule and also the requirements of Part II of

the said Schedule except in so far as the compliance of Part III, IV or V as the case may be, of the said Schedule may otherwise require.

(3) Every existing ship, not being a ship to which freeboards are required to be assigned in accordance with sub-rule (1) of rule 28 read with the proviso to sub-rule (2) thereof, shall comply with such of the requirements relevant to the assignment of freeboards to ships as were applicable to it under the law in force immediately prior to the coming into force of these rules.

25. Compliance with conditions of assignment:-

(1) Except as otherwise provided in sub-rule (2), a ship shall be deemed to be not complying with the conditions of assignment--

(a) if at any time after the assignment of freeboards to it, there has been any alteration of the hull superstructures, fitting or appliances of the ship to such extent that either---

(i) any requirement applicable to the ship under rule 24 is not complied with by it; or

(ii) the record of conditions of assignment made in relation to the ship pursuant to rule 26 is rendered inaccurate in a material respect ; or

(b) if the record of conditions of assignment is not kept on board the ship in accordance with sub-rule (2) of rule 26.

(2) Notwithstanding any alteration in the ship as described in clause (a) of sub-rule (1), a ship shall be deemed to be complying with the conditions of assignment if either--

(a) fresh freeboards appropriate to the conditions of ship after the alterations have been assigned to it and it has been marked with load line and a fresh certificate has been issued to its owner; or

(b) the alteration has been inspected by a surveyor on behalf of the Assigning Authority, and the assigning authority is satisfied that the alteration is not such as to require any change in the freeboards assigned to the ship and full particulars of the alteration together with date and place of inspection have been endorsed by the surveyor on the record of conditions of assignment.

26. Record of conditions of assignment:-

(1) The record of conditions of assignment in respect of the hull, superstructure fittings and appliances of a ship to which freeboard are assigned shall be in

the form set out in the Fourth Schedule, or a form as near thereto as circumstances permit, and shall contain the particulars required by that form. Such particulars may be furnished by attaching to the record a copy of report of survey and specifying in the record passages from that report in which the relevant particulars are given.

(2) The record shall be completed by the surveyor carrying out the survey of the ship pursuant to rule 4 and shall be furnished by him to the assigning authority in accordance with the provisions of rule 5. Two copies of the record shall be sent by the assigning authority to the owner of the ship together with the particulars and directions required to be so furnished by rule 6.

(3) One copy of the record of conditions of assignment particulars and directions furnished by the assigning Authority to the owner of the ship shall, at all times be kept on board the ship in the custody of the master of the ship.

PART V Free Boards

27. Types of freeboards: - The freeboards assignable to any ship under the rules shall be --

(1) Summer freeboard;

(2) Tropical freeboard;

(3) Winter freeboard;

(4) Winter North Atlantic freeboard;

(5) Fresh Water freeboard;

(6) Tropical Fresh Water freeboard;

(7) Summer Timber freeboard;

(8) Winter Timber freeboard;

(9) Winter North Atlantic Timber freeboard;

(10) Tropical Timber freeboard;

(11) Fresh Water Timber freeboard; and

(12) Tropical Fresh Water Timber freeboard.

28. Determination of freeboards: - Except as otherwise provided in rule 29,

(1) the freeboards to be assigned to a new ship shall be determined in accordance with the provisions of the Second Schedule; and

(2) the freeboards to be assigned to an existing ship shall be determined in accordance with the provisions applicable in that behalf to the ship under the rules in force immediately prior to the coming into force of these rules :

Provided that if an existing ship has been so constructed or altered as to comply with the requirements of the First Schedule applicable to a new ship of its type, and an application is made in respect of such ship for the assignment of freeboards determined in accordance with the provisions of the Second Schedule, such freeboards may be assigned to the ship.

29. Exceptions regarding freeboards:-

(1) Greater than minimum freeboard: Any ship may, on the application of the owner made in that behalf be assigned greater than the minimum freeboard determinable in accordance with rule 28, subject to the following conditions, namely :-

(a) On survey of the ship pursuant to rule 4, the assigning authority is satisfied that the ship complies with the requirements of--

(i) Part IV of these rules ;

(ii) the First Schedule, other than those relating to stability;

(iii) Part VI of these rules in so far as they relate to stability; and

(iv) the Third Schedule in so far as they relate to stability.

(b) The ship is not assigned with timber freeboards.

(c) If the greater than minimum freeboard to be assigned to the ship is such that the position of load lines on the sides of the ship appropriate to that freeboard would correspond to, or be lower than, the position at which the lowest of the load lines appropriate to minimum freeboards for that ship would have been marked,--

(i) load line appropriate to the greater than minimum freeboard and the fresh water freeboard should only be marked on the sides of the ship;

(ii) the load line appropriate to the greater than minimum freeboard shall be called the "All season load line" which shall consist of horizontal line interesting the load line mark and such mark shall be placed accordingly;

(iii) the vertical line described in sub-rule (2) of rule 17 shall be omitted; and

(iv) subject to the provisions of sub-clause (iii), the fresh water load line shall be as described in sub-rule (2) of rule 17 and shall be marked accordingly.

(2) Lesser than minimum freeboard: On an application made in this behalf by the owner of a hopper type ship, which is engaged on voyages other than international voyages during the course of which it does not go farther than 20 miles from the nearest land at any time, the Director General of Shipping may, subject to the conditions set out in Part IV of the Second Schedule, assign such ship lesser than minimum freeboard reduced to---

(a) five-eighth of the appropriate minimum freeboard determinable in accordance with the Table B set out in Part V of the Second Schedule ; or

(b) one-half of the appropriate minimum freeboard determinable in accordance with sub-rule (5) or sub-rule (6) of rule18 of the Second Schedule :

Provided that such freeboard shall not in either case be less than 150 millimetres.

30. Special position of deck-line and correction of free-board:- In any case in which the deck-line is to be marked on the sides of a ship in accordance with the provision of sub-rule (3) of rule 15, the freeboards to be assigned to the ship shall be corrected to allow for the vertical distance by which the position of the deck-line is altered by virtue of the provisions of sub-rule (3) of rule 15. The location of the point by reference to which the deckline has been so marked and the identity of the deck which has been regarded as the freeboard deck shall be specified in the load line certificate issued in respect of such ship.

PART VI Stability and loading

31. Information as to stability of ships:

(1) The owner of every ship to which freeboards are assigned under these rules shall, for the guidance of the master of the ship, provide information relating to the stability of the ship in accordance with the provisions of this rule.

(2) Such information shall include stability particulars appropriate to the ship in respect of all matters specified in Part II of the Third Schedule and the method of computation and the form of the particulars should be so far as practicable, in accordance with Part III of that Schedule or equivalent thereto. The stability characteristics shall comply with the criteria specified in Part I of the Third Schedule and the IMO Intact Stability Code, as amended from time to time.

(3) Subject to the provision of sub-rule (4), the information shall, when first supplied, be based on the determination of stability by means of an inclining test which shall, unless the Director General otherwise permits, be carried out in the presence of the Surveyor appointed by the Director General. The information first supplied shall be replaced by fresh information whenever its accuracy is materially affected by alteration of the ship. Such fresh information shall, if the Director General so requires be based on a further inclining test.

(4) The Director General may---

(a) in the case of any ship, permit the information to be based on the determination of stability of sister ship by means of an inclining test.

(b) in the case of any ship specially designed for the carriage of liquids or ore in bulk dispense with the inclining test if from the information available in respect of similar ships, he is satisfied that the ships proportions and arrangements are such as to ensure more than sufficient stability in all probable loading conditions.

(5) The information, and any fresh information to replace the same pursuant to the provisions of sub-rule (3), shall, before issue to the master, be submitted by or on behalf of the owner to the Director General for his approval, together with a copy thereof for his record, and shall incorporate such additions and amendments as the Director General may in any particular case required.

(6) Information provided pursuant to the foregoing provisions of this rule shall be furnished by the owner of the ship to the master in the form of a book which shall be kept on board the ship at all times in the custody of the master of the ship.

(7) Where any alterations are made to a ship so as to materially affect the loading or stability information supplied to the master, amended information shall be provided. If necessary the ship shall be re-inclined.

32. Information as to loading and ballasting of ships:-

(1) The owner of any ship being a ship of more than 150 metres in length specially designed to carry liquids or ore in bulk, to which freeboards are assigned under these rules shall, for the information of the master of the ship, provide information relating to the loading and ballasting of the ship in accordance with the provisions of sub-rules (2) and (3).

(2) Such information shall consist of working instructions specifying in detail the manner in which the ship is to be loaded and; ballasted so as to avoid the

creation of unacceptable stresses in its structure and shall indicate the maximum stresses permissible for the ship.

(3) The provisions of sub-rule (5) of rule 31 shall apply in the like manner to information required under sub-rule (1). Information duly approved by the Director General shall be contained in the book to be furnished to the master of the ship pursuant to the provisions of sub-rule (6) of rule 31, so however, that information required by rule 31 and rule 32 is separately shown in the book under separate headings specifying the number and heading of each rule.

THE FIRST SCHEDULE
Conditions of Assignment

PART I General

1. Interpretations:

(1) Positions 1 and 2:- For the purpose of this schedule 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 and located at least one standard height of superstructure above the freeboard deck.

Upon exposed superstructure decks situated forward of a point located a quarter of the ship's length from the forward perpendicular and located at least two standard heights of superstructure above the freeboard deck.

2. Types of Ships: For the purpose of freeboard computation, ships shall be divided into type ‘A’ and type ‘B’.

(1) Type 'A' Ships: A type ’A’ ship is one which:

(a) is designed to carry only liquid cargoes in bulk;

(b) has a high integrity of the exposed deck with only small access openings to cargo compartments, closed by watertight gasketed covers of steel or equivalent material; and

(c) has low permeability of loaded cargo compartments.

(2) Type .B. ships: All ships which do not come within the provisions regarding type .A. ships in sub-rule (1) shall be considered as type .B. ships.

PART II General conditions of Assignment for all ships

3. Strength of ship: The design and the condition of the ship shall be such that her general structural strength shall be sufficient for the freeboard assigned to her.

4. Stability of ship: The design and the construction of the ship shall be such as to ensure that her stability in all probable loading conditions will be sufficient for the freeboards to be assigned to her for the intended services in accordance with the criteria of stability and methods of calculations laid down in the Sixth Schedule.

5. Weathertight Doors:

(1) All access openings in bulkheads at ends of enclosed superstructure or on any other bulkheads or sides and ends of casings where such weathertight doors are required to be fitted 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 weather tight shall consists of gaskets and clamping devices or other equivalent means and shall be permanently attached to the bulkhead or to the doors themselves and doors shall be so arranged that they can be operated from both sides of the bulkhead.

(2) Unless otherwise permitted by the Administration, doors shall open outwards to provide additional security against the impact of the sea.

(3) Except as otherwise provided in these rules, the height of the sills of access openings in bulkheads at the ends of enclosed superstructure shall be at least 380 millimetres above the deck.

(4) Portable sills shall be avoided. However, in order to facilitate the loading/unloading of heavy spare parts or similar, portable sills may be fitted on the following conditions:

(a) they shall be installed before the ship leaves port; and

(b) they shall be gasketed and fastened by closely spaced through bolts.

6. Superstructure end bulkheads: Bulkheads at exposed ends of enclosed superstructures shall be of efficient construction.

7. General requirements of 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 rules 8 and 9.

(2) Coamings and hatchway covers to exposed hatchways on decks above the superstructure deck shall be of such construction and be fitted with such means for securing the weathertightness of the hatchway as are adequate having regard to its position.

8. Hatchways closed by portable covers and secured weathertight by tarpaulins and battening devices:-

(1) Hatchways coamings : Every hatchway shall have a coaming of substantial construction. The coaming shall be constructed of mild steel unless otherwise permitted. The height of the coaming above the deck shall be at least—

600 millimetres if the hatchway is in position 1.
450 millimietres if the hatchway is in Position 2.

(2) Hatchway covers:

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

(b) Where the covers are made of wood, the finished thickness shall be at least 60 millimetres in association with a span of not more than 1.5 metres and the thickness of cover for larger spans shall be increased in the ratio of 60 millitmeters to a span of 1.5 metres. The ends of wooden covers shall be protected by galvanized steel bands efficiently secured.

(c) Where the covers are made of mild steel the strength shall be calculated with assumed loads in accordance with the requirements of sub-clauses 9(2)(b)(i) through (iii) and the product of the maximum stress thus calculated and the factor 1.25 shall not exceed the minimum upper yield point strength of the material. Covers shall also be so designed as to limit the deflection to not more than 0.0056 times the span under these loads.

(3) Portable beams--- Where portable beams for supporting hatchway covers are made of mild steel, the strength of such beams shall be calculated with the assumed load not less than3.5t/sq.m on hatchways in position 1 and not less than 2.6t/sq.m on hatchways in position 2 and the product of the maximum stress thus calculated and the factor 1.47 shall not exceed the minimum upper yield point strength of the material.. Further, such beams shall also be

so designed as to limit the deflection to not more than 0.0044 times the span under the above assumed loads.

The assumed loads on hatchways in position 1 may be reduced to 2t/sq.m for ships 24m in length and shall be not less than 3.5t/sq.m for ships 100m in length. The corresponding loads on hatchways in position 2 may be reduced to 1.5t/sq.m and 2.6t/sq.m, respectively. In all cases values at intermediate lengths shall be obtained by linear interpolation.

(4) Pontoon covers:

(a) Where pontoon covers of mild steel are used in place of portable beams and covers, their strength shall be calculated in accordance with the requirements of sub-clauses 9(2)(b)(i) through (iii) and the product of the maximum stress thus calculated and the factor 1.47 shall not exceed minimum ultimate strength of the material. Further such beams shall also be so designed as to limit the deflection to not more than 0.0044 times the span.

(b) Mild steel plating forming the tops of such covers shall be not less in thickness than 1 per cent of the spacing of the stiffeners or 6 millimetres, whichever is the greater.

(5) Carriers or sockets: 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.

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

(7) Battens and wedges: 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 thick at the toes.

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

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

(10) Material: If the material of construction of any hatchway coamings, covers and beams are made of other than mild steel the coamings covers and beams made from such materials shall be of equivalent strength and stiffness as those specified in this schedule for mild steel.

9. Hatchways closed by weathertight covers of steel or other equivalent material fitted with gaskets and clamping devices:

(1) Hatchway coamings:

(a) The coamings of hatchways shall be of substantial construction. The height of coamings shall be at least.

600 millimetres in Position 1

450 millimetres in Position 2

(b) Provided if the Director General of Shipping so approves the height of the coaming may be reduced or in exceptional circumstances the coaming may be dispensed with, subject to the condition that the safety of the ship will not thereby by impaired in consequence in the worst sea and weather condition likely to be encountered by the ship in service.

(2) Weathertight Covers:

(a) The strength of weather-tight covers, made of mild steel shall be calculated with an assumed load in accordance with the rules as stated below

(b) Hatch cover minimum design loads

(i) For ships of 100 m in length and above:

A. Position 1 hatch covers located in the forward quarter of the ship.s length shall be designed for wave loads at the forward perpendicular, calculated from the following equation:

$$\text{Load} = 5 + (L_H\text{-}100)a \text{ in t/m2}$$

where:

L_H is L for ships of not more than 340 m but not less than 100 m in length and equal to 340 m for ships of more than 340 m in length;
L is the length of the ship (meters),
a is given in table 3, and reduced linearly to 3.5 t/m2 at the end of the forward quarter's length, as shown in table 4. The design load used for each hatch cover panel shall be that determined at its midpoint location.

B. All other position 1 hatch covers shall be designed to 3.5 t/sq.m.
C. Position 2 hatch covers shall be designed to 2.6 t/sq.m.
D. Where a position 1 hatchway is located at least one superstructure standard height higher than the freeboard deck, it may be designed to 3.5 t/ sq.m.

Table 3

	a
Type B freeboard ships	0.0074
Ships assigned reduced freeboard by sub-rule 4(5) or (6) of second schedule	0.0363

(ii) For ships 24 m in length:

E. Position 1 hatch covers located in the forward quarter of the ship's length shall be designed for wave loads of 2.43t/sq.m at the forward perpendicular and reduced linearly to 2t/sq.m at the end of the forward quarter's length as shown in table 4. The design load used for each hatch cover panel shall be that determined at its midpoint location.
F. All other position 1 hatch covers shall be designed to 2t/sq.m.
G. Position 2 hatch covers shall be designed to 1.5t/sq.m.
H. Where a position 1 hatchway is located at least one superstructure standard height higher than the freeboard deck, it may be designed to 2t/sq.m.

(iii) For ships between 24 m and 100 m in length, and for positions between FP and 0.25L, wave loads shall be obtained by linear interpolation of the values shown in table 4.

Table 4

	Longitudinal Position

	FP	0.25L	Aft of 0.25L
L>100 m			
Freeboard beck	Equation in 9(2)(b)	3.5 t/m2	3.5 t/m2
Superstructure deck	3.5 t/m2		2.6 t/m2
L=100 m			
Freeboard deck	5 t/m2	3.5 t/m2	3.5 t/m2
Superstructure deck	3.5 t/m2		2.6 t/m2
L= 24 m			
Freeboard deck	2.43 t/m2	2 t/m2	2 t/m2
Superstructure deck	2 t/m2		1.5 t/m2

(iv) All hatch covers shall be designed such that:

I. the product of the maximum stress determined in accordance with the above loads and the factor of 1.25 does not exceed the minimum upper yield point strength of the material in tension and the critical buckling strength in compression;
J. the deflection is limited to not more than 0.0056 times the span;
K. steel plating forming the tops of covers is not less in thickness than 1% of the spacing of stiffeners or 6 mm if that be greater; and
L. an appropriate corrosion margin is incorporated.

(c) Means of securing weather tightness: The hatch covers shall be made weathertight by fitting gaskets and clamping devices. Hatch covers which rest on coamings shall be located in their closed position by means capable of withstanding horizontally acting loads in any sea conditions. Any equivalent arrangements, if adopted, shall ensure that the tightness can be maintained in any sea conditions and for the 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.

10. Machinery space openings:

(1) Machinery space openings in position 1 or 2 shall be properly framed and efficiently enclosed by steel casing of ample strengths account being taken of the extent, if any, to which the casing is protected by other structures.

(2) Every doorway in such casings shall be fitted with doors complying with rule 5 of this Schedule having sills of at least the following heights:

600 millimetres above the deck if the opening is in Position 1

380 millimetres above the deck if the opening I in Position 2.

Other openings in such casing shall be fitted with permanently attached covers or steel, by which it can be closed weather tight and except in the case of a cover consisting of a plate secured by bolts is capable of being operated from both sides.

(3) Where machinery casings are not protected by other structures, double doors (i.e. inner and outer doors complying with the requirements of sub-rule 5(1) of the first schedule) shall be required for ships assigned freeboards less than those based on table B provided in Part V of the Second Schedule. An inner sill of 230 mm in conjunction with the outer sill of 600 mm shall be provided.

(4) Coamings of any fiddly, funnel or machinery space ventilators in a exposed position on the freeboard or super-structure deck shall be as high above the deck as practicable having regard to its position and adequate protection from the sea. In general, ventilators necessary to continuously supply the machinery space shall have coamings of sufficient height to comply with sub-rule 12(5), without having to fit weathertight closing appliances. Ventilators necessary to continuously supply the emergency generator room, if this is considered buoyant in the stability calculation or protecting opening leading below, shall have coamings of sufficient height to comply with sub-rule 12(5), without having to fit weathertight closing appliances.

(5) Where due to ship size and arrangement this is not practicable, lesser heights for machinery space and emergency generator room ventilator coamings, fitted with weathertight closing appliances in accordance with sub-rule 12(4), may be permitted in combination with other suitable arrangements to ensure an uninterrupted, adequate supply of ventilation to these spaces.

(6) Fiddly 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.

11. Miscellaneous openings in freeboard and superstructure decks:

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

(2) Openings in a deck other than a hatchway, machinery space opening, manhole and flush scuttle,--

(a) if situated in the freeboard deck shall be protected by an enclosed superstructure or by a deck-house or companion way equivalent in strength and weather-tightness to an enclosed superstructure ;

(b) if situated in an exposed position in a deck over an enclosed superstructure and giving access to space within that superstructure or on top of a deckhouse on the freeboard deck and giving access to space below the free board deck, shall be protected by an efficient deckhouse or companionway fitted with weathertight doors in accordance with rule 5;

(c) if situated in an exposed position in a deck above the deck over an enclosed superstructure and giving access to space within that superstructure, shall be protected either in accordance with the requirements of clause (b) or to such lesser extent as having regard to its position.

(3) Openings in the top of a deckhouse on a raised quarterdeck or superstructure of less than standard height, having a height equal to or greater than the standard quarterdeck height, shall be provided with an acceptable means of closing but need not be protected by an efficient deckhouse or companionway as defined in this rule, provided that the height of the deckhouse is at least the standard height of a superstructure. Openings in the top of the deck house on a deck house of less than a standard superstructure height may be treated in a similar manner.

(4) Doorways in such efficient deckhouse companionway or enclosed superstructure as referred to in sub-rule (2) shall be fitted with doors complying with the requirements of rule 5 and shall have the following minimum sill heights --

600 millimetres in Position 1

380 millimetres in Position 2

(5) Where access is provided from the deck above as an alternative to access from the freeboard deck in accordance with Rule 2(9) of Part I, then the

height of sills into a bridge or poop shall be 380 mm. The same shall apply to deckhouses on the freeboard deck.

(6) Where access is not provided from above, the height of the sills to doorways in deckhouses on the freeboard deck shall be 600 mm.

(7) Where the closing appliances of access openings in superstructures and deckhouses are not in accordance with rule 5(1) of the first schedule, interior deck openings shall be considered exposed (i.e. situated in the open deck).

12. Ventilators:

(1) Ventilators in position 1 or 2 to space below the freeboard deck or decks of enclosed superstructure shall have coaming of steel or other equivalent material, substantially constructed and efficiently connected to the deck.

(2) The height of the ventilator coamings shall be, at least

900 millimetres above the deck if the ventilator is in Position 1;

760 millimetres above the deck if the ventilator is in Position 2;

Provided that where a ventilator is situated in a position in which it will be particularly subjected to weather and sea the height of the coaming shall be increased sufficiently over the above minimum height so as to provide adequate protection, having regard to its position.

Where the coaming of any ventilator of any ventilator exceeds 900 millimetres in height it shall be efficiently supported by brackets, stays or other means.

(3) Ventilators in Position 1 or 2 passing through super-structures other than enclosed superstructures shall have coaming of steel or other equivalent material, substiantially constructed and connected to the freeboard deck.

(4) Subject to the sub-rule (5), every ventilator opening in Positon 1 or 2 shall be provided with an efficient appliance by which it can be closed and secured weathertight. Every such closing appliance so provided on board a ship of not more than 100 metres in length shall be permanently attached to and in the case of any other ship shall either be so attached or be conveniently stowed near the ventilator to which it is fitted.

(5) A ventilator in Position 1 the coaming of which exceeds 4.5 metres in height above the deck, and a ventilator in Position 2 the coaming of which exceeds 2.3 metres in height above the deck, need not be fitted with a closing appliance unless--

(a) it serves the machinery spaces or a Cargo compartment or

(b) the fitting of such an appliance is necessary in the circumstances in order to provide adequate protection.

A ventilator in Position 1 or 2 leading to space in a battery room shall not be fitted with a closing appliance.

13. Air Pipes:

(1) 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 and the exposed opening of any such air pipe shall be fitted with automatic closing devices which shall be permanently attached thereto.

(2) The height above the deck of the air pipe opening through which water may gain access below shall be—

(a) at least 760 millimetres if that deck is freeboard deck.

(b) at least 450 millimetres if that deck is above the superstructure of standard height or such greater height not exceeding 760 millimetres as it is considered necessary for adequate protection having regard to the lower height of superstructure than the standard.

(3) Provided that the height described in the preceding sub-rule (2) may in any particular case be lower than the minimum specified therein, if such height may unreasonably interfere with the working of the ship and if the closing arrangements are such as to ensure adequate protection from the sea even with the lower height.

(4) Pressure-vacuum valves (PV valves) may be accepted on tankers.

14. Cargo ports and other similar openings:

(1) The number of cargo ports and other similar openings in the sides of the ship below the freeboard deck or in the sides or ends of superstructure which form continuous part of the shell of the ship shall be as few as compatible with the design and proper working of the ship. Unless otherwise granted by the Director General, these opening shall open outwards.

(2) Such Cargo ports and openings shall be provided with doors so fitted and designed as to ensure watertightness and structural integrity commensurate with surrounding shell plating.

(3) Unless so permitted by the Director General in the circumstances, 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 at least 230 mm above the upper edge of the uppermost load line.

(4) Where it is permitted to arrange cargo ports and other similar openings with their lower edge below the line specified in sub-rule (3) additional features shall be fitted to maintain the watertight integrity.

(5) The fitting of a second door of equivalent strength and watertightness is one acceptable arrangement. A leakage detection device shall be provided in the compartment between the two doors. Drainage of this compartment to the bilges, controlled by a readily accessible screw down valve, shall be arranged. The outer door shall open outwards.

(6) Arrangements for bow doors and their inner doors, side doors and stern doors and their securings shall be in compliance with the applicable national standards which provide an equivalent level of safety.

15. Scuppers, Inlets and Discharges:

(1) All discharges led overboard through the shell or a ship from either--

(a) spaces below the freeboard deck, or

(b) spaces within enclosed superstructure, or

(c) spaces within any deckhouses on the freeboard deck fitted with weathertight doors in accordance with rule 5, shall be fitted with efficient and accessible means for preventing water from passing inboard in accordance with the following sub-rules.

(d) Subject to clause (b) and (c) such means of closing shall consist of a single automatic non-returns valve fitted at the shell and having positive means of closing from a position above the freeboard deck. Such position shall be readily accessible and shall be provided with an indicator showing whether the valve is open or closed.

(e) If the vertical distance from the summer load water line to the inboard end of the discharge pipe exceeds 0.01L, the discharge may have two automatic non-return valves without positive means of closing, where however, that vertical distance exceeds 0.02L, a single automatic non-return valve without positive means of closing may be provided if it will be equally effective in the circumstances. The single valve or the outboard valve where there are two shall be situated as close to the hull as practicable and substantially connected thereto.

(f) Scuppers and discharge pipes originating at any level and penetrating the shell either more than 450 millimetres below the free board deck or less than 600 millimetres above the summer load waterline shall be provided

with a non-return valve at the shell. This valve, unless required by clause (a) may be dispensed with, if the piping is of substantial construction.

(g) One automatic non-return valve and one sluice valve controlled from above the freeboard deck instead of one automatic non-return valve with a positive means of closing from a position above the freeboard deck, is acceptable.

(h) Where two automatic non-return valves are required, the inboard valve shall always be accessible for examination under service conditions (i.e., the inboard valve shall be above the level of the Tropical Load Line). If this is not practicable, the inboard valve need not be located above the Tropical Load Line, provided that a locally controlled sluice valve is fitted between the two automatic non-return valves.

(i) Where sanitary discharges and scuppers lead overboard through the shell in way of machinery spaces, a locally operated positive closing valve at the shell, together with a non-return valve inboard, is acceptable. The controls of the valves shall be in an easily accessible position.

(j) The position of the inboard end of discharges shall be related to the Summer Timber Load Line when a timber freeboard is assigned.

(k) The requirements for non-return valves are applicable only to those discharges which remain open during the normal operation of a ship. For discharges which are to be kept closed at sea, a single screw down valve operated from the deck is acceptable.

(l) The controls of any valve situated in a manned machinery space, and serving a main of auxiliary sea inlet or discharge or bilge injection system shall be so sited as to be readily accessible at all times under service conditions. Valves referred to in this and the following clause shall be equipped with an indicator showing whether the valve is open or closed.

(m) The controls of any valve situated in an unattended machinery space and serving a sea inlet or discharge of bilge injection system shall be so sited as to be readily accessible at all times under service conditions, particular attention being paid in this regard to possible delay in reaching or operating the controls. In addition, the machinery space in which the valve is situated shall be equipped with an efficient warning device to give warning at suitable control position of any entry of water into the machinery space other than water resulting from the normal operation of the machinery.

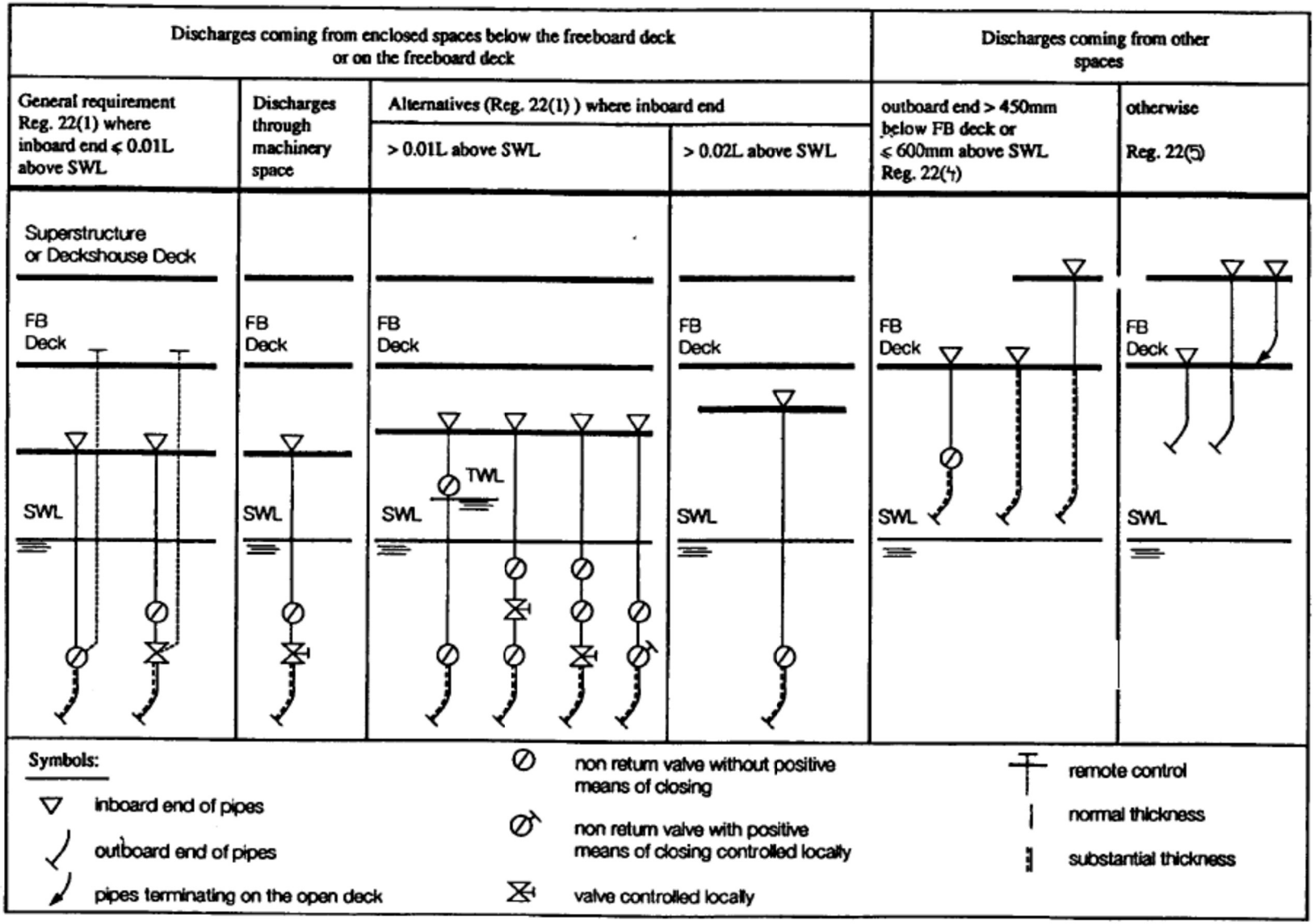
(n) In this sub-rule "unattended machinery space" means a machinery space which during normal operation of the ship at sea is unmanned for any period, and "manned machinery space" means a machinery space other than an unattended machinery space.

(2) Every scupper leading from a superstructure other than an enclose superstructure or from a deckhouse not fitted with weathertight doors shall be led over board.

(3) All valve and shell fittings required by the provisions of this rule shall be of steel, bronze or other suitable ductile material, and all pipes referred to in this rule shall be steel or other equivalent material.

(4) Scuppers led through the shell from enclosed superstructures used for the carriage of cargo shall be permitted only where the edge of the freeboard deck is not immersed when the ship heels 5° either way. In other cases the drainage shall be led inboard in accordance with the requirements of the International Convention for the Safety of Life at Sea in force.

(5) Following table provides the acceptable arrangements of scuppers, inlets and discharges.


Discharges coming from enclosed spaces below the freeboard deck or on the freeboard deck
Discharges coming from other spaces
General requirement Reg. 22(1) where inboard end ≤ 0.01L above SWL
Discharges through machinery space
Alternatives (Reg. 22(1)) where inboard end
> 0.01L above SWL
> 0.02L above SWL
outboard end > 450mm below FB deck or ≤ 600mm above SWL Reg. 22(4)
otherwise Reg. 22(5)
Superstructure or Deckshouse Deck
FB Deck
SWL
TWL
Symbols:
inboard end of pipes
outboard end of pipes
pipes terminating on the open deck
non return valve without positive means of closing
non return valve with positive means of closing controlled locally
valve controlled locally
remote control
normal thickness
substantial thickness

(6) Scupper and discharge pipes:

(a) For scupper and discharge pipes, where substantial thickness is not required:

(i) for pipes having an external diameter equal to or less than 155 mm the thickness shall not be less than 4.5 mm;

(ii) for pipes having an external diameter equal to or more than 230 mm, the thickness shall not be less than 6 mm.

(iii) Intermediate sizes shall be determined by linear interpolation.

(b) For scupper and discharge pipes, where substantial thickness is required:

(i) for pipes having an external diameter equal to or less than 80 mm, the thickness shall not be less than 7 mm;

(ii) for pipes having an external diameter of 180 mm, the thickness shall not be less than 10 mm;

(iii) for pipes having an external diameter equal to or more than 220 mm, the thickness shall not be less than 12.5 mm.

(iv) Intermediate sizes shall be determined by linear interpolation.

16. Side scuttles, windows and skylights:

(1) Side scuttles and windows, together with their glasses, deadlights and storm covers, if fitted, shall be of an approved design and substantial construction. Non-metallic frames are not acceptable.

(2) Side scuttles are defined as being round or oval openings with an area not exceeding 0.16 ㎡. Round or oval openings having areas exceeding 0.16 ㎡shall be treated as windows.

(3) Windows are defined as being rectangular openings generally, having a radius at each corner relative to the window size and round or oval openings with an area exceeding 0.16㎡.

(4) Side scuttles to the following spaces shall be fitted with hinged inside deadlights:

(a) spaces below freeboard deck;

(b) spaces within the first tier of enclosed superstructures; and

(c) first tier deckhouses on the freeboard deck protecting openings leading below or considered buoyant in stability calculations.

(d) Deadlights shall be capable of being closed and secured watertight if fitted below the freeboard deck and weathertight if fitted above.

(5) Side scuttles shall not be fitted in such a position that their sills are below a line drawn parallel to the freeboard deck at side and having its lowest point 2.5% of the breadth (B), or 500 mm, whichever is the greater distance, above the Summer Load Line (or Timber Summer Load Line if assigned).

(6) If the required damage stability calculations indicate that the side scuttles would become immersed at any intermediate stage of flooding or the final equilibrium waterline, they shall be of the non-opening type.

(7) Windows shall not be fitted in the following locations:

(a) below the freeboard deck;

(b) in the first tier end bulkheads or sides of enclosed superstructures; or

(c) in first tier deckhouses that are considered buoyant in the stability calculations.

(8) Side scuttles and windows at the side shell in the second tier shall be provided with hinged inside deadlights capable of being closed and secured weathertight if the superstructure protects direct access to an opening leading below or is considered buoyant in the stability calculations.

(9) Side scuttles and windows in side bulkheads set inboard from the side shell in the second tier which protect direct access below to spaces listed in sub-rule (4) shall be provided with either hinged inside deadlights or, where they are accessible, permanently attached external storm covers which are capable of being closed and secured weathertight.

(10) Cabin bulkheads and doors in the second tier and above separating side scuttles and windows from a direct access leading below or the second tier considered buoyant in the stability calculations may be accepted in place of deadlights or storm covers fitted to the side scuttles and windows.

(11) Deckhouses situated on a raised quarter deck or on the deck of a superstructure of less than standard height may be regarded as being in the second tier as far as the requirements for deadlights are concerned, provided that the height of the raised quarter deck or superstructure is equal to or greater than the standard quarter deck height.

(12) Fixed or opening skylights shall have a glass thickness appropriate to their size and position as required for side scuttles and windows. Skylight glasses in any position shall be protected from mechanical damage and, where fitted

in position 1 or 2, shall be provided with permanently attached deadlights or storm covers.

17. Freeing ports:

(1) General:

(a) Where bulkwarks on weather portions of freeboard deck or superstructure decks form wells, ample provision shall be made for rapidly freeing the deck of water and draining them.

(b) Except as provided in sub-rules (1)(c) and (2), 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 following formulae:

where the length of bulkwark (L) in the well is 20 metres or less--

A=0.7 + 0.035L (sq.metres)

where L is greater than 20 metres;

A=0.07L (sq. metres).

the length of bulkwark (L) in no case need be taken greater than 0.7L.

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

(c) In ships with no sheer, the area calculated according to clause (b) shall be increased by 50%. Where the sheer is less than the standard, the percentage shall be obtained by linear interpolation.

(d) On a flush deck ship with a deckhouse amidships having a breadth at least 80% of the beam of the ship and the passageways along the side of the ship not exceeding 1.5 m in width, two wells are formed. Each shall be given the required freeing port area based upon the length of each well.

(e) Where a screen bulkhead is fitted completely across the ship at the forward end of a midship deckhouse, the exposed deck is divided into two wells and there is no limitation on the breadth of the deckhouse.

(f) Wells on raised quarterdecks shall be treated as being on freeboard decks.

(g) Gutter bars greater than 300 mm in height fitted around the weather decks of tankers in way of cargo manifolds and cargo piping shall be treated as bulwarks. Freeing ports shall be arranged in accordance with this rule. Closures attached to the freeing ports for use during loading and discharge operations are to be arranged in such a way that jamming cannot occur while at sea.

(2) Where a ship fitted with a trunk does not comply with the requirements of clause 9(1)(e) of the second schedule 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.

(3) The effectiveness of the freeing area in bulwarks required by sub-rule (1) depends on the free flow area across the deck of a ship.

The free flow area on deck is the net area of gaps between hatchways, and between hatchways and superstructures and deckhouses up to the actual height of the bulwark.

The freeing port area in bulwarks shall be assessed in relation to the net free flow area as follows:

(a) If the free flow area is not less than the freeing area calculated from sub-rule (2) as if the hatchway coamings were continuous, then the minimum freeing port area calculated from sub-rule (1) shall be deemed sufficient.

(b) If the free flow area is equal to, or less than the area calculated from sub-rule (1), the minimum freeing area in the bulwarks shall be determined from sub-rule (2).

(c) If the free flow area is smaller than calculated from sub-rule (2), but greater than calculated from sub-rule (1), the minimum freeing area in the bulwark shall be determined from the following formula:

$F = F1 + F2 - f_p$ sq.m

where:

F1 is the minimum freeing area calculated from sub-rule (1);

F2 is the minimum freeing area calculated from sub-rule (2); and

f_p is the total net area of passages and gaps between hatch ends and superstructures or deckhouses up to the actual height of bulwark.

(4) In ships having superstructures on the freeboard deck or superstructure decks, which are open at either or both ends to wells formed by bulwarks on the open decks, adequate provision for freeing the open spaces within the superstructures shall be provided to the satisfaction of the Assigning Authority.

The minimum freeing port area on each side of the ship for the open superstructure (A_s) and for the open well (A_w), shall be calculated in accordance with the following procedure:

(a) Determine the total well length (l_t) equal to the sum of the length of the open deck enclosed by bulwarks (l_w) and the length of the common space within the open superstructure (l_s).

(b) To determine A_s:

(i) calculate the freeing port area (A) required for an open well of length l_t in accordance with sub-rule (1) with standard height bulwark assumed;

(ii) multiply by a factor of 1.5 to correct for the absence of sheer, if applicable, in accordance with clause (1)(c);

(iii) multiply by the factor (b_o/l_t) to adjust the freeing port area for the breadth (b_o) of the openings in the end bulkhead of the enclosed superstructure;

(iv) to adjust the freeing port area for that part of the entire length of the well which is enclosed by the open superstructure, multiply by the factor:

$$1 - (l_w/l_t)^2$$

where l_w and l_t are defined in clause (4)(a);

(v) to adjust the freeing port area for the distance of the well deck above the freeboard deck, for decks located more than 0.5 h_s above the freeboard deck, multiply by the factor :

$$0.5\ (h_s/h_w)$$

where h_w is the distance of the well deck above the freeboard deck and h_s is one standard superstructure height.

(c) To determine A_w:

(i) The freeing port area for the open well (A_w) shall be calculated in accordance with sub-clause (b)(i), using l_w to calculate a nominal freeing port area (A'), and then adjusted for the actual height of the bulwark (h_b) by the application of one of the following area corrections, whichever is applicable:

for bulwarks greater than 1.2 m in height:

$$A_c = l_w((h_b - 1.2)/0.10)(0.004) \text{ m2};$$

for bulwarks less than 0.9 m in height:

$$A_c = l_w((h_b - 0.9)/0.10)(0.004) \text{ m2};$$

for bulwarks between 1.2 m and 0.9 m in height there is no correction (i.e. $A_c = 0$);

(ii) the corrected freeing port area ($A_w = A' + A_c$) shall then be adjusted for absence of sheer, if applicable, and height above freeboard deck as in sub-clauses (b)(ii) and (b)(v), using h_s and h_w.

(d) The resulting freeing port areas for the open superstructure (A_s) and for the open well (A_w) shall be provided along each side of the open space covered by the open superstructure and each side of the open well, respectively.

(e) The above relationships are summarised by the following equations, assuming lt, the sum of l_w and l_s, is greater than 20 m:

freeing port area A_w for the open well:

$$A_w = (0.07l_w + A_c) \text{ (sheer correction) } (0.5h_s/h_w);$$

freeing port area A_s for the open superstructure:

$$A_s = (0.07l_t) \text{ (sheer correction) } (b_o/l_t) (1 - (l_w/l_t)2) (0.5h_s/h_w);$$

where l_t is 20 m or less, the basic freeing port area is $A = 0.7 + 0.035l_t$ in accordance with sub-rule (1).

(5) The lower edges of 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. One third of the freeing port area required shall be evenly spread along the remaining length of the well. With zero or little sheer on the exposed freeboard deck or an exposed superstructure deck the freeing port area shall be evenly spread along the length of the well.

(6) All freeing port openings in the bulwarks shall be protected by rails or bars spaced approximately 230 mm 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. Shutters shall not be fitted with securing appliances.

18. Spurling pipes and cable lockers:

(1) Spurling pipes and cable lockers shall be watertight up to the deck exposed to weather.

(2) Where means of access are provided, they shall be closed by a substantial cover and secured by closely spaced bolts.

(3) Spurling pipes through which anchor cables are led shall be provided with permanently attached closing appliances to minimize water ingress.

19. Garbage chutes:

(1) Two gate valves controlled from the working deck of the chute instead of the non-return valve with a positive means of closing from a position above the freeboard deck which comply with the following requirements are acceptable:

(a) the lower gate valve shall be controlled from a position above the freeboard deck. An interlock system between the two valves shall be arranged;

(b) the inboard end shall be located above the waterline formed by an 8.5° heel to port or starboard at a draft corresponding to the assigned summer freeboard, but not less than 1,000 mm above the summer waterline.

Where the inboard end exceeds 0.01L above the summer waterline, valve control from the freeboard deck is not required, provided the inboard gate valve is always accessible under service conditions; and

(c) alternatively, the upper and lower gate valves may be replaced by a hinged weathertight cover at the inboard end of the chute together with a discharge flap. The cover and flap shall be arranged with an interlock so that the discharge flap cannot be operated until the hopper cover is closed.

(2) The entire chute, including the cover, shall be constructed of material of substantial thickness.

(3) The controls for the gate valves and/or hinged covers shall be clearly marked: "Keep closed when not in use".

(4) Where the inboard end of the chute is below the freeboard deck of a passenger ship or the equilibrium waterlines of a cargo ship to which damage stability requirements apply, then:

(a) the inboard end hinged cover/valve shall be watertight;

(b) the valve shall be a screw-down non-return valve fitted in an easily accessible position above the deepest load line; and

(c) the screw-down non-return valve shall be controlled from a position above the bulkhead deck and provided with open/closed indicators. The valve control shall be clearly marked: "Keep closed when not in use".

20. Protection of the Crew:

(1) The strength of the deckhouses used for the accommodation of the crew shall be to the satisfaction of the Director General or any other Assigning Authority as the case may be.

(2) Efficient guard rails or bulkwarks shall be fitted on the boundaries of all exposed parts of the freeboard decks. The height of the bulkwarks or guard rails shall be at least 1 metre from the deck.

Provided that if this height would interfered with the normal operation of the ship at some particular span, a lesser height over that span may be approved by the Assigning authority on being fully satisfied that alternative or adequate protection is provided. In specified areas of the exposed decks, the assigning authority may also permit the use of guard wire in lieu of guard rails.

(3) Guard rails fitted on superstructure and freeboard decks shall have at least three courses. The opening below the lowest course of the guard rails or wires shall not exceed 230 millimetres. The other courses shall not be more than 380 millimetres apart. In the case of ships with rounded gunwales, the stanchions shall be secured to the flat boundary of the deck. In other locations, guardrails with at least two courses shall be fitted. Guard rails shall comply with the following provisions:

(a) fixed, removable or hinged stanchions shall be fitted about 1.5 m apart. Removable or hinged stanchions shall be capable of being locked in the upright position;

(b) at least every third stanchion shall be supported by a bracket or stay;

(c) where necessary for the normal operation of the ship, steel wire ropes may be accepted in lieu of guard rails. Wires shall be made taut by means of turnbuckles; and

(d) where necessary for the normal operation of the ship, chains fitted between two fixed stanchions and/or bulwarks are acceptable in lieu of guard rails.

(4) Satisfactory and safe means in the form of guard rails, guard wires, lifelines gangways or under-deck 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 essential operation of the ship can be closed and secured against water ingress. Protection for the crew in the form of guard rails or lifelines shall be provided above the deck cargo if there is no convenient passage on or below the deck of the ship.

(6) Means for safe passage of crew

The safe passage of crew shall be provided by at least one of the means prescribed in table 5 below:

Table 5

Type of Ship	Locations of access in ship	Assigned summer freeboard	Acceptable arrangements according to type of freeboard assigned.			
			Type –'A'	Type 'B-100'	Type 'B-60'	Type 'B' and 'B+'
All ships other than Oil tankers*, Chemical Tankers* and Gas Carriers*	1.1 Access to midship quarters 1.1.1 Between poop and bridge, or 1.1.2 Between poop and Deckhouse containing living accommodation or navigating equipment or both.	<3000 mm	(a) (b) (e)	(a) (b) (e)	(a) (b) (c)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (c)(iv) (d)(i) (d)(ii) (d)(iii) (e) (f)(i) (f)(ii) (f)(iv)
		>3000 mm	(a) (b) (e)	(a) (b) (e)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	

	1.2 Access to ends 1.2.1 Between poop and bow (if there is no bridge), 1.2.2 Between bridge and bow, or 1.2.3 Between a deckhouse containing living accommodation or navigating equipment, or both, and bow or 1.2.4 In the case of a flush deck ship between crew accommodation and the forward and after ends of ship.	<3000 mm	(a) (b) (c)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	(a) (b) (c)(i) (c)(ii) (e) (f)(i) (f)(ii)	
		>3000 mm	(a) (b) (c)(i) (d)(i) (e) (f)(i)	(a) (b) (c)(i) (c)(ii) (d)(i) (d)(ii) (e) (f)(i) (f)(ii)	(a) (b) (c)(i) (c)(ii) (c)(iv) (d)(i) (d)(ii) (d)(iii) (e) (f)(i) (f)(ii) (f)(iv)	
Type of Ship	Locations of access in ship	Assigned summer freeboard	Acceptable arrangements according to type of freeboard assigned.			
			Type A			
Oil tankers*, Chemical Tankers* and Gas	2.1 Access to bow 2.1.1 Between poop and bow, or 2.1.2 Between a deckhouse containing living	< (Af + Hs)**	(a) (e) (f)(i) (f)(v)			

Carriers*	accommodation or navigating equipment, or both, and bow, or 2.1.3 In the case of a flush deck ship between crew accommodation and the forward and after ends of ship.	> (Af + Hs)**	(a) (e) (f)(i) (f)(ii)
	2.2 Access to after end 2.2.1 In the case of a flush deck ship between crew accommodation and the forward and after ends of ship.	As required in 1.2.4 for other types of ships	

* Oil tankers, chemical tankers and gas carriers as defined in regulations II-1/2.12, VII/8.2 and VII/11.2, respectively, of the International Convention for the Safety of Life at Sea, 1974, as amended.

** Af: the minimum summer freeboard calculated as type .A. ship regardless of the type freeboard actually assigned.

Hs: the standard height of superstructure as defined in rule 8 of the second schedule.

*** Arrangements (a)-(f) are described in sub-rule (2) below. Locations (i)-(v) are described in sub-rule (3) below.

Acceptable arrangements referred to in table 5 are defined as follows:

(a) A well lighted and ventilated under-deck passageway (with a clear opening of at least 0.8 m wide and 2 m high), as close as practicable to the freeboard deck, connecting and providing access to the locations in question.

(b) A permanent and efficiently constructed gangway, fitted at or above the level of the superstructure deck, on or as near as practicable to the centre line of the ship, providing a continuous platform at least 0.6 m in width and a non-slip surface and with guard rails extending on each side throughout its length. Guard rails shall be at least 1 m high with three courses and constructed as required in sub-**rule 20(3).** A foot-stop shall be provided.

(c) A permanent walkway at least 0.6 m in width, fitted at freeboard deck level and consisting of two rows of guard rails with stanchions spaced not more than 3 m. The number of courses of rails and their spacing shall be in accordance with sub-**rule 20(3).** On type .B. ships, hatchway coamings not less than 0.6 m in height may be accepted as forming one side of the walkway, provided that two rows of guard rails are fitted between the hatchways.

(d) A wire rope lifeline not less than 10 mm in diameter, supported by stanchions not more than 10 m apart, or a single hand rail or wire rope attached to hatch coamings, continued and supported between hatchways.

(e) A permanent gangway that is:

(i) located at or above the level of the superstructure deck;

(ii) located on or as near as practicable to the centre line of the ship;

(iii) located so as not to hinder easy access across the working areas of the deck;

(iv) providing a continuous platform at least 1 m in width;

(v) constructed of fire resistant and non-slip material;

(vi) fitted with guard rails extending on each side throughout its length; guard rails shall be at least 1 m high with courses as required by sub-**rule 20(3)** and supported by stanchions spaced not more than 1.5 m apart;

(vii) provided with a foot-stop on each side;

(viii) having openings, with ladders where appropriate, to and from the deck. Openings shall not be more than 40 m apart; and

(ix) having shelters set in way of the gangway at intervals not exceeding 45 m if the length of the exposed deck to be traversed exceeds 70 m. Every such shelter shall be capable of accommodating at least one person and be so constructed as to afford weather protection on the forward, port and starboard sides.

(f) A permanent walkway located at the freeboard deck level, on or as near as practicable to the centre line of the ship, having the same specifications as those for a permanent gangway listed in (e), except for foot-stops. On type .B. ships (certified for the carriage of liquids in bulk) with a combined

height of hatch coaming and fitted hatch cover of not less than 1 m in height, the hatchway coamings may be accepted as forming one side of the walkway, provided that two rows of guard rails are fitted between the hatchways.

(g) Permitted transverse locations for arrangements in clauses (2)(c), (d) and (f) above, where appropriate:

(i) at or near the centre line of the ship; or fitted on hatchways at or near the centre line of the ship;

(ii) fitted on each side of the ship;

(iii) fitted on one side of the ship, provision being made for fitting on either side;

(iv) fitted on one side of the ship only;

(v) fitted on each side of the hatchways, as near to the centre line as practicable.

(h)

(i) Where wire ropes are fitted, turnbuckles shall be provided to ensure their tautness.

(ii) Where necessary for the normal operation of the ship, steel wire ropes may be accepted in lieu of guard rails.

(iii) Where necessary for the normal operation of the ship, chains fitted between two fixed stanchions are acceptable in lieu of guard rails.

(iv) Where stanchions are fitted, every third stanchion shall be supported by a bracket or stay.

(v) Removable or hinged stanchions shall be capable of being locked in the upright position.

(vi) A means of passage over obstructions such as pipes or other fittings of a permanent nature shall be provided.

(vii) Generally, the width of the gangway or deck-level walkway should not exceed 1.5 m.

(i) For tankers less than 100 m in length, the minimum width of the gangway platform or deck-level walkway fitted in accordance with clauses (2)(e) or (f) above, respectively, may be reduced to 0.6 m.

PART III Special conditions of assignments for type A ships

21. Machinery casings:

(1) The Machinery Casing on Type A ships shall be protected by:-

(a) an enclosed poop or bridge of at least standard height or

(b) a deckhouse of equal height and equivalent strength and weathertightness

(2) Provided that this requirement shall not apply and the casing may accordingly be exposed---

(a) if there is no opening in the casing which gives direct access from the free-board deck to the machinery space; or

(b) if the only opening in the casing has a steel weathertight door complying with rule 5 and leads to a space or passageway which is as strongly, constructed as the casing and is separated from the stairway to the machinery space by a second similar steel weathertight door.

22. Gangway and access:

(1) References in this rule to a poop or detached bridge on Type A ships include reference to a deckhouse fitted in lieu of and serving the purpose of a poop or detached bridge.

(2) Access between the poop and the detached bridge shall be by means of either ---

(a) Gangway complying with the requirements of sub-rule (4), or

(b) an underdeck passage complying with the requirements of sub- rule (5), or

(c) other equally effective and equivalent approved means of access as per Table 5 of rule 20.

(3) In the case of a ship the crew of which may in the course of their duties be required to go in adverse weather conditions to a position or positions forward of the detached bridge, or forward of the poop in cases where there is no detached bridge and all crew accommodation and machinery spaces are situated at the after end of the ship, access to such positions shall be by means of either--

(a) a gangway complying with the requirements of sub- rule (4), or

(b) an underdeck passage complying with the requirements of sub- rule (5), or

(c) a walkway complying with the requirements of sub- rule (6).

(4) A gangway, connecting the specified super-structure or deckhouse in lieu and required under this Part, shall comply with the following requirements--

(a) The gangway shall be permanently and efficiently constructed at the level of the superstructure deck. Efficient means of access from gangway level to the deck shall be provided at each terminal.

(b) the gangway platform shall be at least 1 metre in width and of non-slip material. The platform shall be fitted at each side throughout its length with guard rails or guard wires supported by stanchions. Such rails or wires shall consist of not less than 3 courses, the lowest being not more than 230 mm above the platform and intermediate ones being not more than 380 mm apart, but the uppermost one being not less than 1 metre above the platform. The stanchions supporting the rails or guard wires shall be at intervals of not more than 1.5 metres.

(5) An underdeck passageway connecting and providing unobstructed access between specified superstructures or deckhouses in lieu, and required under this Part, shall comply with the following requirements.

(a) the passage shall be constructed oil0tight and gastight immediately below the freeboard deck and shall be well-lighted and adequately ventilated by mechanical ventilation. The passage shall be fitted with efficient gas detection system.

(b) the passage shall be situated throughout its length at distance from the shipside of not less than one-fifth of the breadth (B) of the ship, Provided that in the case of a ship so designed as to render compliance with this requirement is not practicable, two under-deck passages may be provided one to port and one to starboard, each of which shall comply with all requirements except the requirement of this clause.

(c) the means of exit from the passage to the freeboard deck shall be so arranged as to be as near as practicable to the working areas of the crew but in no case be more than 90 metres apart and fitted with efficient means of closing capable of quick release and operable from either sides. The companionway or deckhouse on the freeboard deck protecting the exit shall be fitted with steel door complying with rule 5 of this Schedule.

(6) A walkway providing unobstructed passage if necessary by means of elevated passage over permanent obstruction, and required under this Part, shall comply with the following requirements--

(a) the walkway shall be situated as near as practicable to the centerline of the ship and shall be not less than 1 metre in width and fitted with guardrails or guard wires complying identically with those in clause (4) (b) of this rule;

(b) the walkway shall provide free access to and from freeboard deck, set in such guard rails or guard wires as near as practicable to the working areas, so however, that such openings shall be on the alternate sides of the walkway and be situated not more than 90 metres apart on either side;

(c) if the length of the exposed deck to be traversed exceeds 70 metres, the walkway shall be provided with shelters of substantial construction set out from the walkway at intervals not exceeding 45 metres, every such shelter being capable of accommodating at least one person and so constructed as to afford weather protection on the forward, port and starboard sides.

23. Hatchway covers: The covers of hatchway in an exposed position on the freeboard deck, on a forecastle deck or on the top of an expansion trunk (of type A ships) shall be of steel, or other equivalent material of efficient construction, and watertight when secured.

24. Freeing arrangements:

(1) All exposed parts of the freeboard deck and superstructure decks of Type 'A' ships shall be fitted at shipsides for at least half their length with guard rails or guard wires in lieu of bulkwarks or other equally effective freeing arrangements. A freeing port area, in the lower part of the bulwarks, of 33% of the total area of the bulwarks, is an acceptable equivalent freeing arrangement. The upper edge of the sheer strake shall be kept as low as practicable. Guard rails or guard wires shall comply with the requirements for them in clause (4)(b) of **rule 22** of this Part and the upper edge of the sheer strake shall be as low as practicable.

(2) If the superstructures of the Type A ships are connected by a trunk, the exposed parts of the freeboard deck in way of the trunk shall be fitted at ship sides with guard rails or guard wires complying with the requirements for them in clause (4) (b) of rule 22 of this Part.

(3) If the ship is so constructed that notwithstanding the provisions of freeing ports and arrangements it will be particularly subjected under service conditions to the building up of quantities of water on the freeboard deck efficient breakwater shall be fitted in suitable positions on that deck.

PART IV Special conditions of assignment for type B ships with reduced freeboard

25. Gangway and access:

(1) Unless a type B ship with reduced freeboard complies fully with requirements of **rule 22** as if the ship were a Type A ship, such a ship shall comply with the requirements of the Table 5 of Rule 20:-

(2) Freeing arrangements: The ship shall comply with the requirements of **rule 24** of this Schedule.

PART V Special Conditions of Assignment for Ships with Timber Freeboard

26. Superstructure:

(1) The ship shall have a forecastle of not less than the standard height of an enclosed superstructure and a length of not less than 0.07 L.

(2) If the ship is less than 100 metres in length it shall be fitted with a poop of not less than standard height or a raised quarter deck having either a deckhouse or a strong steel hood, so that the total height thereof is not less than the standard height of an enclosed superstructure.

27. Double bottom tanks: Double bottom tanks where fitted within the mid ship half-length of the ship shall have satisfactory watertight longitudinal sub-division.

28. Bulkwark and tanks:

(1) The ship shall be fitted with either permanent bulkwark at least 1 metre in height, especially stiffened on the upper edge and supported by strong bulkwark stays attached to the deck and provided with freeing ports complying with the requirements of rule 17 of this Schedule, or

(2) Efficient guard rails and stanchions at least 1 metre in height, of especially strong construction and complying with the requirements of **sub-rule 20(2**).

29. Stowage:

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

(2) Timber deck cargoes 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 deck cargo shall extend athwartships as close as possible to the ship's side, due allowance being made for obstructions such as guard rails, bulwark stays, uprights, pilot access, etc., provided that any gap thus created at the side of the ship shall not exceed a mean of 4% of the breadth. The timber shall be stowed as solidly as possible to at least the standard height of the superstructure other than any raised quarterdeck.

(3) On a ship within a seasonal winter zone in winter, the height of the deck cargo above the deck exposed to weather 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.

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

(6) Timber deck cargo shall be effectively secured throughout its length by a lashing system acceptable to the Director General for the character of the timber carried.

(7) 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 arising from absorption of water or icing, if applicable, and to losses of weight such as those arising from consumption of fuel and stores.

(8) Protection of crew, access to machinery spaces, etc.

(a) In addition to the requirements of **rule 20(5**), guard-rails or lifelines not more than 350 mm apart vertically shall be provided on each side of the cargo deck to a height of at least 1 m above the cargo.

In addition a lifeline, preferably wire rope set up taut with a stretching screw, shall be provided as near as practicable to the centreline of the ship. The stanchion supports to all guard-rails and lifelines shall be so spaced as to prevent undue sagging. Where the cargo is uneven, a safe walking surface of not less than 600 mm in width shall be fitted over the cargo and effectively secured beneath or adjacent to the lifeline.

(b) Where the requirements prescribed in clause (a) are impracticable, alternative arrangements satisfactory to the Director General shall be used.

30. Steering Arrangement: 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.

31. Equivalents and Exemptions:-The assigning authority may with the approval of the Director General of Shipping--

(1) allow any fitting, material, appliances or apparatus to be fitted in a ship, in place of any fitting, material, appliance, apparatus or provisions respectively which is required under any of the provisions of this Schedule, if satisfied by trial thereof or otherwise that it is at least as effective as that so required.

(2) grant in any exceptional case exemptions from the requirements of any of the said provisions of this Schedule on condition that the freeboards to be assigned to the ship are increased to such an extent that the safety of the ship and protection afforded to the crew till be considered no less effective than would be the case if the ship fully complied with those requirements with the usual rule freeboard.

THE SECOND SCHEDULE

Freeboards

PART I General

1. Application:

(a) Except as otherwise provided in sub-rules (2) and (3), the freeboards to be assigned to a ship other than Timber freeboards shall be determined in accordance with the provisions of Part II of this Schedule, and Timber freeboards to be assigned to a ship shall be determined in accordance with Part III.

(b) Freeboards determined as described in sub-rule (1) are the freeboards appropriate to ships the structural strength of which complies with the highest standard required by an Assigning Authority; and the freeboard to be assigned to ships the structural strength of which does not comply with that standard shall be freeboards so determined but increased in each case by such amount as the Assigning Authority with the approval of the

Director General may determine as appropriate to the ship's structural strength.

(c) Tabular freeboards appropriate to the ship's length are set out in Freeboard Table A for Type A ships and Freeboard Table B for Type B ships in Part V of this Schedule.

(d) The freeboards to be assigned to tugs and unmanned barges having as the freeboard deck only small access closed watertight or ships with unusual construction features shall be determined in accordance with provisions of Part IV of this Schedule.

PART II Freeboards other than Timber Freeboards

2. Computation of Freeboards:

(1) The Summer freeboard shall be determined in accordance with the provisions of rules 3 and 4 of this Schedule:

Provided that the freeboard in salt water, so obtained but without any correction made for the deck line as provided in paragraph 6 shall not be less than 50 millmetres except in case of a ship having in position 1 hatchways which do not comply with the requirements of paragraphs 8(4), 9 or **23** of the first Schedule, in which case the freeboard shall not be less than 150 millimetres.

(2) The Tropical freeboard shall be obtained by deducting from the Summer freeboard applicable to the ship one forty-eight (1/48th) of the summer draft of the ship:

Provided further that the freeboard in salt water, so obtained but without any correction made for the deckline as provided in rule 6 shall not be less than 50 millimetres except in case of a ship having in Position 1 hatchways with covers which do not comply with the requirements of rules 8(4), 9 or 23 of First Schedule, in which case the freeboard shall not be less than 150 millimetres.

(3) The Winter Freeboard shall be obtained by adding to the Summer freeboard applicable to the ship one forty-eighth (1/48th) of the summer draft of the ship.

(4) For ship not more than 100 metres in length, the Winter North Atlantic freeboard shall be obtained by adding 50 millimetres to the Winter freeboard applicable to the ship. For other ships, the Winter North Atlantic freeboard shall be the winter freeboard.

(5) The Fresh Water freeboard:-

(a) The Fresh Water freeboard shall, subject to clause (b), be obtained by deducting from the summer freeboard the quantity—

(Δ/40T) centimetre

where Δ is the displacement in salt water in metric tons at summer load waterline and T represents metric tons per centimetre immersion in salt water at that waterline.

(b) In any case in which the displacement at that waterline cannot be ascertained the deduction shall be one-forty-eighth (1/48th) of the summer draft of the ship.

3. Summer Freeboard for Type A ships ---

(1) The summer freeboard for Type A ship shall be determined as follows:

(a) There shall first be ascertained the Tabular Freeboard appropriate to the ship's length.

(b) For ships having black co-efficient (Cb) of not exceeding than 0.68, the basic freeboard shall be tabular freeboard and for ships having black coefficient (Cb) exceeding 0.68, the basic freeboard shall be obtained by multiplying the Tabular freeboard by the factor:

$$(Cb+0.68)/1.36$$

(2) The basic freeboard shall then be duly corrected in accordance with the requirements of rule 5 to 12 of this Schedule.

(3) Subject to the proviso to sub-rule 2(1), the basic freeboard so corrected shall be the summer freeboard to be assigned to the Type A ship.

(4) A type .A. ship, if over 150 m in length, to which a freeboard less than type ’B’ has been assigned, when loaded in accordance with the requirements of sub-rule 4 (7), shall be able to withstand the flooding of any compartment or compartments, with an assumed permeability of 0.95, consequent upon the damage assumptions specified in sub-rule 4(8), and shall remain afloat in a satisfactory condition of equilibrium, as specified in sub-rule 4(9). In such a ship, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(5) A type .A. ship shall be assigned a freeboard not less than that based on table A of Part V.

4. Summer Freeboard for Type B ships. --- The summer freeboard for Type B ship shall be determined as follows:

(1) There shall first be ascertained the Tabular freeboard appropriate to the ship's length.

(2) Type .B. ships, which in position 1 have hatch covers which are permitted by the Administration to comply with the requirements of rule 8 (other than paragraph (4)) or which are fitted with equivalent securing arrangements accepted under the provisions of rule 9(3), shall be assigned freeboards based upon the values given in table B, increased by the amount shown by the following Table to the appropriate ship's length

TABLE

Length of ship (metres)	Freeboard increase (millimetres)	Length of ship (metres)	Freeboard increase (millimetres)	Length of ship (metres)	Freeboard increase (millimetres)
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

Freeboard at intermediate length shall be obtained by liner interpolation. The increase in the case of ships of more than 200 metres in length shall be such amount as the Director General may determine in each particular case.

(3) Type .B. ships, which in position 1 have hatchways fitted with hatch covers complying with the requirements of sub-rule 9(2) of the First Schedule shall, except as provided in sub-rules(4) to (9) inclusive, be assigned freeboards based on table B of Part V.

(4) Any type .B. ship of over 100 m in length may be assigned freeboards less than those required under sub-rule (3), provided that, in relation to the amount of reduction granted, the Administration 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 position 1 and 2 comply with the provisions of sub-rules 9(1) through (5) and (7); and

(d) the ship, when loaded in accordance with the requirements of sub-rule (7), shall be able to withstand the flooding of any compartment or compartments, with an assumed permeability of 0.95, consequent upon the damage assumptions specified in paragraph (8), and shall remain afloat in a satisfactory condition of equilibrium, as specified in paragraph (9). In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(5) In calculating the freeboards for type ’B’ ships which comply with the requirements of sub-rules (4), (7), (8) and (9), the values from table B of Part V shall not be reduced by more than 60% of the difference between the tabular values in table A and table B of Part V for the appropriate ship lengths.

(6) Type B-100 freeboard:-

(a) The reduction in tabular freeboard allowed under sub-rule (5) may be increased up to the total difference between the values in table A and table B of Part V on condition that the ship complies with the requirements of:

(i) Part III, other than rule 23 of first schedule as if it were a type .A. ship;

(ii) sub-rules (4), (7) and (9) of this rule; and

(iii) sub-rule (8), provided that throughout the length of the ship any one transverse bulkhead will be assumed to be damaged, such that two adjacent fore and aft compartments shall be flooded simultaneously, except that such damage will not apply to the boundary bulkheads of a machinery space.

(b) In such a ship, if over 150 m in length, the machinery space shall be treated as a floodable compartment, but with a permeability of 0.85.

(7) Initial condition of loading: The initial condition of loading before flooding shall be determined as follows:

(a) The ship is loaded to its summer load waterline on an imaginary even keel.

(b) When calculating the vertical centre of gravity, the following principles apply:

(i) homogeneous cargo is carried;

(ii) all cargo compartments, except those referred to under sub-clause (iii), but including compartments intended to be partially filled, shall be considered fully loaded except that in the case of fluid cargoes each compartment shall be treated as 98% full;

(iii) if the ship is intended to operate at its summer load waterline with empty compartments, such compartments shall be considered empty, provided the height of the centre of gravity so calculated is not less than as calculated under sub-clause(ii);

(iv) 50% of the individual total capacity of all tanks and spaces fitted to contain consumable liquids and stores is allowed for. It shall be assumed that for each type of liquid at least one transverse pair or a single centreline tank has maximum free surface, and the tank or combination of tanks to be taken into account shall be those where the effect of free surfaces is the greatest; in each tank the centre of gravity of the contents shall be taken at the centre of volume of the tank. The remaining tanks shall be assumed either completely empty or completely filled, and the distribution of consumable liquids between these tanks shall be effected so as to obtain the greatest possible height above the keel for the centre of gravity;

(v) at an angle of heel of not more than 5° in each compartment containing liquids, as prescribed in sub-clause (ii), except that in the case of compartments containing consumable fluids, as prescribed in sub-clause (iv), the maximum free surface effect shall be taken into account. Alternatively, the actual free surface effects may be used, provided the methods of calculation are acceptable to the Administration;

(vi) weights shall be calculated on the basis of the following values for specific gravities:

salt water	1.025
fresh water	1.000
oil fuel	0.950
diesel oil	0.900
lubricating oil	0.900.

(8) Damage assumptions: The following principles regarding the character of the assumed damage apply:

(a) The vertical extent of damage in all cases is assumed to be from the base line upwards without limit.

(b) The transverse extent of damage is equal to B/5 or 11.5 m, whichever is the lesser, measured inboard from the side of the ship perpendicularly to the centreline at the level of the summer load waterline.

(c) If damage of a lesser extent than specified in clauses (a) and (b) results in a more severe condition, such lesser extent shall be assumed.

(d) Except where otherwise required by clause (10)(a), the flooding shall be confined to a single compartment between adjacent transverse bulkheads, provided that the inner longitudinal boundary of the compartment is not in a position within the transverse extent of assumed damage. Transverse boundary bulkheads of wing tanks, which do not extend over the full breadth of the ship shall be assumed not to be damaged, provided that they extend beyond the transverse extent of assumed damage prescribed in clause (b).

If in a transverse bulkhead there are steps or recesses of not more than 3 m in length, located within the transverse extent of assumed damage as defined in clause (b), such transverse bulkhead may be considered intact and the adjacent compartment may be floodable singly. If, however, within the transverse extent of assumed damage there is a step or recess of more than 3 m in length in a transverse bulkhead, the two compartments adjacent to this bulkhead shall be considered as flooded. The step formed by the after peak bulkhead and the after peak tank top shall not be regarded as a step for the purpose of this rule.

(e) Where a main transverse bulkhead is located within the transverse extent of assumed damage and is stepped in way of a double bottom or side tank by more than 3 m, the double bottom or side tanks adjacent to the stepped

portion of the main transverse bulkhead shall be considered as flooded simultaneously. If this side tank has openings into one or several holds, such as grain feeding holes, such hold or holds shall be considered as flooded simultaneously. Similarly, in a ship designed for the carriage of fluid cargoes, if a side tank has openings into adjacent compartments, such adjacent compartments shall be considered as empty and as being flooded simultaneously. This provision is applicable even where such openings are fitted with closing appliances, except in the case of sluice valves fitted in bulkheads between tanks and where the valves are controlled from the deck. Manhole covers with closely spaced bolts are considered equivalent to the un-pierced bulkhead, except in the case of openings in topside tanks making the topside tanks common to the holds.

(f) Where the flooding of any two adjacent fore and aft compartments is envisaged, main transverse watertight bulkheads shall be spaced at least 1/3 $L^{2/3}$ or 14.5 m, whichever is the lesser, in order to be considered effective. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads shall be assumed as non-existent in order to achieve the minimum spacing between bulkheads.

(9) Condition of equilibrium: The condition of equilibrium after flooding shall be regarded as satisfactory provided:

(a) The final waterline after flooding, taking into account sinkage, heel and trim, is below the lower edge of any opening through which progressive downflooding may take place. Such openings shall include air pipes, ventilators (even if they comply with rule 12(4)) and openings which are closed by means of weathertight doors (even if they comply with rule 5) or hatch covers (even if they comply with rule 9 and may exclude those openings closed by means of manhole covers and flush scuttles (which comply with rule 11), cargo hatch covers of the type described in rule 2, remotely operated sliding watertight doors, and sidescuttles of the non-opening type (which comply with rule 16). However, in the case of doors separating a main machinery space from a steering gear compartment, watertight doors may be of a hinged, quick-acting type kept closed at sea whilst not in use, provided also that the lower sill of such doors is above the summer load waterline.

(b) If pipes, ducts or tunnels are situated within the assumed extent of damage penetration as defined in clause (8)(b), arrangements shall be

made so that progressive flooding cannot thereby extend to compartments other than those assumed to be floodable in the calculation for each case of damage.

(c) The angle of heel due to unsymmetrical flooding does not exceed 15°. If no part of the deck is immersed, an angle of heel of up to 17° may be accepted.

(d) The metacentric height in the flooded condition is positive.

(e) When any part of the deck outside the compartment assumed flooded in a particular case of damage is immersed, or in any case where the margin of stability in the flooded condition may be considered doubtful, the residual stability is to be investigated. It may be regarded as sufficient if the righting lever curve has a minimum range of 20° beyond the position of equilibrium with a maximum righting lever of at least 0.1 m within this range. The area under the righting lever curve within this range shall be not less than 0.0175 m.rad. The Administration shall give consideration to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within the range of residual stability.

(f) The Administration is satisfied that the stability is sufficient during intermediate stages of flooding.

(10) The tabular freeboard for a type .B. ship of between 24 m and 100 m in length having enclosed superstructures with an effective length of up to 35% of the length of the ship shall be increased by:

$$7.5\,(100 - \mathrm{L})\left(0.35 - \frac{E_1}{L}\right) \quad (\mathrm{mm})$$

where L is the length of the ship in m; and
E1 is the effective length E of superstructure in m as defined in **sub-rule 8(4),** but excluding the length of trunks.

(11) In the case of a ship the block co-efficient (Cb) of which exceeds 0.68 the freeboard calculated in respect of the ship in accordance with applicable sub-rules above shall be multiplied by the factor.

$$\frac{C_b + 0.68}{1.36}$$

The block coefficient is not to be taken greater than 1.0.

(12) The basic freeboard of a Type B ship is that calculated in accordance with sub-rules (1) to (11) above. The basic freeboard duly corrected in accordance with rules 5 to 12 of this Schedule but subject to the proviso to sub-rule 2(1) shall be assigned as the summer freeboard of the ship.

5. Correction for depth ---

(1) If the depth for freeboard D exceeds L/15 the freeboard shall be increased by (D-L/15) R millimeters where R is L /0.48 at lengths less than 120 metres and 250 at 120 metres length and above.

(2) If the depth for freeboard D is less than L/15, no reduction shall be made except in a ship with an enclosed superstructure covering at least 0.6L amidships, with a complete trunk, or combination of detached enclosed super-structures and trunks which extend all fore and aft, where the freeboard shall be reduced at the rate prescribed in sub-rule (1) above.

(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 rule 8 below.

6. 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.

7. Correction for recesses in freeboard deck:

(1) Where a recess is arranged in the freeboard deck, and it does not extend to the sides of the ship, the freeboard calculated without regard to the recess shall be corrected for the consequent loss of buoyancy. The correction shall be equal to the value obtained by dividing the volume of the recess by the waterplane area of the ship at 85% of the least moulded depth (see figure 7-1).

(2) The correction shall be an addition to the freeboard obtained after the other corrections have been applied, except bow height correction.

(3) Where the freeboard, corrected for lost buoyancy as above, is greater than the minimum geometric freeboard determined on the basis of a moulded depth measured to the bottom of the recess, the latter value may be used.

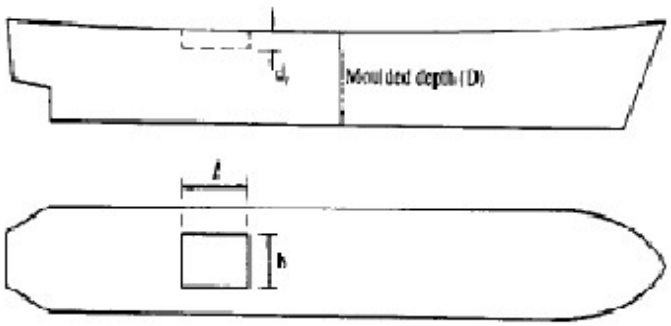


Figure 7-1

Correction is the addition to freeboard equal to:

$$\frac{l \times b \times d_r}{WP\ Area\ at\ 0.85D}$$

8. Standard Superstructure and correction: Standard height, length and effective length of superstructures :--

(1) The standard height of a superstructure shall be the height appropriate to the ship's length L determined in accordance with the following Table 8-1:

Table 8-1

Ships Length(L) (metre)	Standard Height (metres)	
	Raised Quarterdeck	All other superstructure
30 or less	0.9	1.8
75	1.2	1.8
125 or more	1.8	2.3

Standard heights for intermediate length of ship shall be obtained by linear interpolation.

(2) Length of Superstructure:

(a) Subject to clauses (b) and (c), the length of a superstructure(s) shall be the mean length of the parts of the superstructure which lie within the length of the ship (L).

Where a superstructure bulkhead is recessed, the effective length of the superstructure shall be reduced by an amount equal to the area of the recess in plan view divided by the breadth of the superstructure at the midlength of the recess. Where the recess is unsymmetrical about the centreline, the largest portion of the recess shall be considered as applying to both sides of the ship. A recess need not be decked over.

(b) 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.

(c) Where there is an extension to a superstructure, which extension has a breadth on each side of the centre line at least 30% of the breadth of the ship, the effective length of the superstructure may be increased by considering an equivalent superstructure bulkhead in the form of a parabola. This parabola shall extend from the extension at the centreline and pass through the junction of the actual superstructure bulkhead with the sides of the extension and extend to the sides of the ship. This parabola shall be completely contained within the boundary of the superstructure and its extensions.

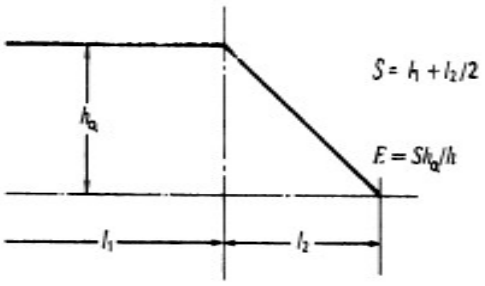
If the superstructure is set-in from the side, up to the limit allowed under **regulation Part I Preliminary 2(27**), the equivalent bulkhead should be calculated on the basis of the actual breadth of the superstructure (and not the breadth of the ship).

(3) Superstructures which have sloped end bulkheads shall be dealt with in the following manner:

(a) When the height of superstructure, clear of the slope, is equal to or smaller than the standard height, length S is to be obtained as shown in figure 8-1.

(b) When the height is greater than the standard, length S is to be obtained as shown in figure 8-2.

(c) The foregoing will apply only when the slope, related to the base line, is 15° or greater. Where the slope is less than 15°, the configuration shall be treated as sheer.



(d)

Figure 8-1 Height of superstructure equal to or smaller than the standard height h

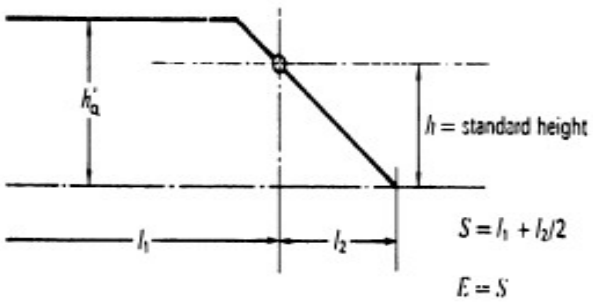


Figure 8-2 Height of superstructure greater than the standard height

(4) The effective length of a superstructure (E) shall be as follows:-

Subject to clause (b), E in the case of an enclosed superstructure of standard height shall be either:

(a) its length S, or

(b) if the superstructure is set in from the sides of the ship, its length S modified in the ratio 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 (s)

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

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

Where the height, clear of the slope, of a superstructure which has sloped end bulkheads is less than the standard height, its effective length E shall be its length S as obtained from **figure 8-1**, reduced in the ratio of the actual height to the standard height.

Where a poop or forecastle of less than standard height is fitted on a ship with excessive sheer but without any superstructure within 0.2L amidships, credit may be given to the height of the poop or forecastle by increasing the actual height by the difference between the actual and the standard sheer profiles. The deduction for excess sheer in accordance with **sub-rule 11(14)** is not to be granted.

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

The maximum effective length of 0.6L of a raised quarterdeck is to be measured from the after perpendicular, even where a poop is fitted in conjunction with the raised quarterdeck.

(7) A superstructure which is not an enclosed superstructure shall have no effective length.

9. Standard height and effective length of trunk:

(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, the hatchway coamings and covers comply with the requirements of rules 8 and 9 of first schedule 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 or, alternatively, freeing port area in

the lower part of the bulwarks, subject to **sub-rule 17(2**), of 33% of the total area of the bulwarks is provided;

(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% of the breadth of the ship; and

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

(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 rule 8, 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.

(5) Where the trunk height is less than standard and the trunk hatch coamings are also of less than standard height, or omitted entirely, the reduction from the actual height of trunk on account of insufficient hatch coaming height shall be taken as the difference between 600 mm and the actual height of coaming, or 600 mm if no hatch coamings are fitted. Reduction in the actual height of trunk shall not be required in cases where only small hatches with less than standard height are fitted in the trunk deck for which dispensation from the requirement of standard coaming height may be given.

(6) Continuous hatchways may be treated as a trunk in the freeboard computation, provided the provisions of this sub-rule are complied with in all respects.

The trunk deck stringer referred to in clause (1)(b) may be fitted outboard of the trunk side bulkhead in association with the following:

(a) the stringer so formed is to provide a clear walkway of at least 450 mm in width on each side of the ship;

(b) the stringer is to be of solid plate, efficiently supported and stiffened;

(c) the stringer is to be as high above the freeboard deck as practicable. In the freeboard calculation, the trunk height is to be reduced by at least 600

mm or by the actual difference between the top of the trunk and the stringer, whichever is greater;

(d) hatch cover securing appliances are to be accessible from the stringer or walkway; and

(e) the breadth of the trunk is to be measured between the trunk side bulkheads.

(7) Where the trunk adjoining the superstructures such as poop, bridge or forecastle is included in the calculation of freeboard, openings shall not be arranged in that part of the bulkhead which is common for the trunk and superstructure. A relaxation may be made for small openings such as for piping, cable or manholes with covers attached by means of bolts.

(8) The sides of a trunk included in the calculation of freeboard shall be intact. Side scuttles of the non-opening type and bolted manhole covers may be allowed.

10. Deduction for superstructure and trunks:--

(1) Where the effective length of superstructures and trunks of a ship is 1.0(L), the basic freeboard of the ship shall be reduced by an amount determined appropriate to the Ship's length in accordance with the following Table 10-1, namely :-

TABLE 10-1

Length of a ship L (metre)	Reduction in freeboard millimetre
24	350
85	860
122	1070

The reduction in freeboard for intermediate lengths of ships shall be obtained by interpolation.

(2) Where the effective length of superstructure and trunks is less than 1.0(L) the deduction shall be a percentage obtained from table 10-2:

TABLE 10-2

Percentage of deduction for Type A and Type B ships

Total effective length of superstructure 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 and trunks shall be obtained by linear interpolation.

For ships of type 'B' where the effective length of a forecastle is less than 0.07L, no deduction is allowed.

11. Measurement of sheer:-

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

(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 the standard heights shall be added to each end ordinate. Similarly, the intermediate ordinates at distance of 1/6 L and 1/3 L from each perpendicular shall be increased by 0.444Z and 0.111Z respectively. Where there is an enclosed poop or forecastle superimposed on the superstructure, sheer credit shall be allowed for such a poop or forecastle, according to the method of sub-rule (12) as shown in figure 11.1.

(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 freeboard deck shall not be taken into account.

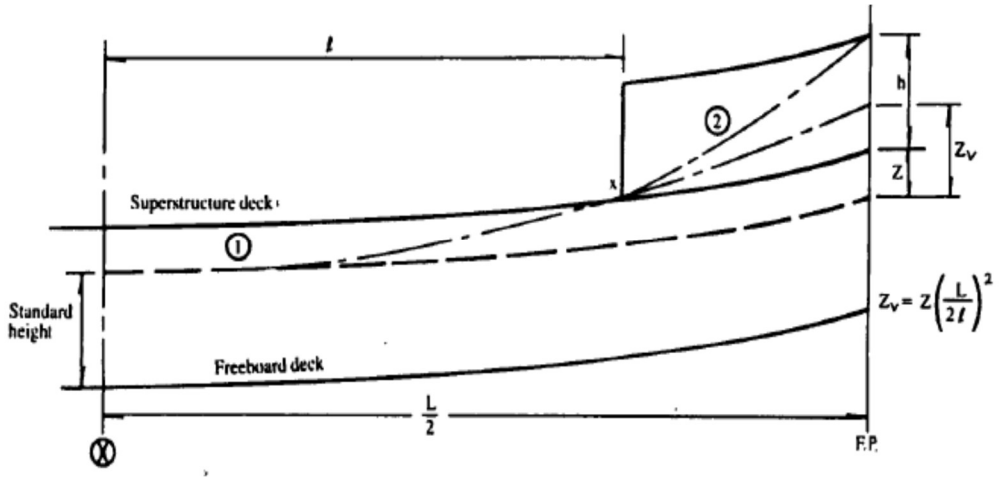


Fig. 11.1

(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 sub-rule (12).

Where a poop or forecastle consists of two layers, the method shown in figure 11.2 shall be used.

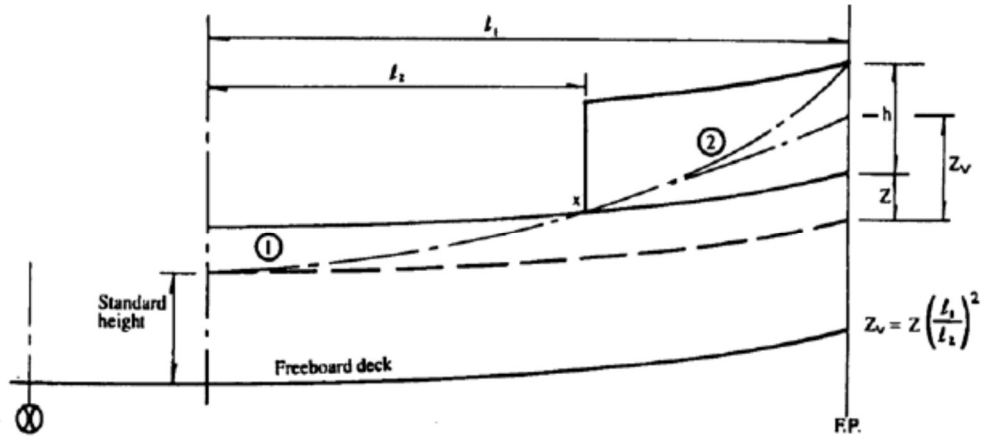


Fig.11.2

In figures 11.1and 11.2, the following definitions apply:
Z is as defined in sub-rule (5); and
Zv is the end ordinate of a virtual standard parabolic curve taken through the point "X". If Zv is greater than (Z + h), the end ordinate shall be (Z + h), in which case point "X" shall be disregarded and curve (2) not taken into account.

When the length of the first tier superstructure is greater than 0.5*l*, the virtual standard parabolic curve shall commence at amidships as indicated in figure 11.1.

(8) Standard sheer profile: The ordinate of the standard sheer profile given in the following Table 11-1; namely:-

Standard sheer profile
(where L is in m)

	Station	Ordinate (in mm)	Factor
After half	After perpendicular	$25\ (\frac{L}{3}+10)$	1
	$^1/_6$ L from A.P.	$11.1\ (\frac{L}{3}+10)$	3
	⅓ L from A.P.	$2.8\ (\frac{L}{3}+10)$	3
	Amidships	0	1
Forward half	Amidships	0	1
	⅓ L from F.P.	$5.6\ (\frac{L}{3}+10)$	3
	$^1/_6$ L from F.P.	$22.2\ (\frac{L}{3}+10)$	3
	Forward perpendicular	$50\ (\frac{L}{3}+10)$	1

Table 11-1

(9) Measurement of variation from standard sheer profile:-

(a) 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 Table of ordinates. The difference between the sums of respective products and those of the standard divided by 8 measures the deficiency or excess of sheer in the forward or after held. The arithmetical mean of the excess or deficiency in the forward and after halves measures the excess or deficiency of sheer.

(b) 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.

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

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

$$S=YL'/3L$$

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 superstructure at forward and after perpendicular.

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

L = the length of the ship

The above formula provides a curve in the form of a parabola tangential 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 the curve at any point. This curve shall be used in determining the sheer profile for the forward and after halves of the ship.

(11)

(a) Any excess in the height of a superstructure which does not extend to the after perpendicular cannot be regarded as contributing to the sheer allowance.

(b) Where the height of a superstructure is less than standard, the superstructure deck shall not be less than the minimum height of the superstructure above the virtual shear curve at any point. For this purpose y shall be taken as the difference between the actual and minimum height of the superstructure at the after/forward perpendicular.

(c) For a raised quarterdeck credit may be given only when the height of this quarterdeck is greater than the standard height of 'other superstructures' as defined in rule 8 of the second schedule, and only for the amount by which the actual height of the raised quarterdeck exceeds that standard height.

(d) When a poop or a forecastle has sloping end bulkheads, the sheer credit may be allowed on account of excess height. The formula given in sub-rule (10) shall be used, the values for y and L' being as shown in figure 11-3.

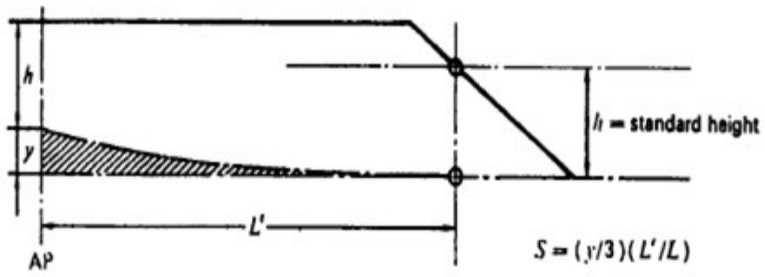


Figure 11-3

(12) Correction for variations from standard sheer:-

(a) The correction for sheer shall be the deficiency or excess of sheer determined by clauses **9(a) to (c) inclusive** multiplied by

$$(0.75 – S_1/2L)$$

where S_1 is the total length S of enclosed superstructures as defined in sub-rule 8(2) without trunks.

(13) Where the sheer is less than the standard, the correction for deficiency of sheer determined in accordance with sub-rule (12) shall be added to the basic freeboard of the ship.

(14) subject to sub-rule (4), in the case of a ship having an excess of sheer –

(a) if an enclosed superstructure covers (0.1) L before and (0.1) L abaft amid ships, the correction for excess of sheer determined in accordance with sub-rule (12) shall be deducted from the basic freeboard of the ship;

(b) if no enclosed superstructure covers amidships, no deduction shall be made from the basic free board of the ship;

(c) where an enclosed superstructure covers less than 0.1L before and 0.1L abaft amidships, the deduction shall be obtained by linear interpolation.

In applying this sub-rule, the height of the superstructure shall be related to its standard height. Where the height of the superstructure or raised quarterdeck is less than standard, the reduction shall be in the ratio of the actual to the standard height thereof.

(d) The maximum deduction for excess sheer shall be at the rate of 125 millimetres per 100 metres of length (L).

12. Correction for Minimum Bow Height:-

(1) The bow height (F_b), 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:

$$F_b = (6075(L/100) - 1875(L/100)^2 + 200(L/100)^3) \times (2.08 + 0.609C_b - 1.603C_{wf} - 0.0129(L/d_1))$$

where:

F_b is the calculated minimum bow height, in mm;

L is the length, in m;

B is the moulded breadth, in m;

d_1 is the draught at 85% of the depth D, in m;

C_b is the block coefficient;

C_{wf} is the waterplane area coefficient forward of L/2: $C_{wf} = A_{wf}/\{(L/2) \times B\}$;

A_{wf} is the waterplane area forward of L/2 at draught d_1, in m2.

For ships to which timber freeboards are assigned, the summer freeboard (and not the timber summer freeboard) is to be assumed when applying sub-rule (1).

(2) Where the bow height required in sub-rule (1) is obtained by sheer, the sheer shall extend for at least 15% 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 0.07L abaft the forward perpendicular, and shall be enclosed as defined in **rule** 2(9) of Part I Preliminary.

(3) Ships which, to suit exceptional operational requirements, cannot meet the requirements of sub-rule (1) and (2) of this rule may be given special consideration by the Director General.

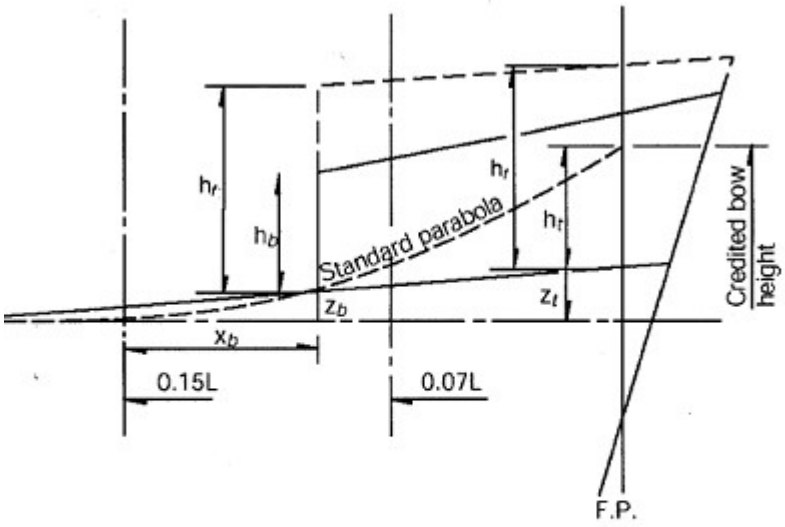
(4)

(a) The sheer of the forecastle deck may be taken into account, even if the length of the forecastle is less than 0.15L, but greater than 0.07L, provided that the forecastle height is not less than one half of standard height of superstructure as defined in rule 8 of the second schedule between 0.07L and the forward perpendicular.

(b) Where the forecastle height is less than one half of the standard height of superstructure, as defined in rule 8 of the second schedule, the credited bow height may be determined as follows:

(i) Where the freeboard deck has sheer extending from abaft 0.15L, by a parabolic curve having its origin at 0.15L abaft the forward perpendicular at a height equal to the midship depth of the ship, extended through the point of intersection of forecastle bulkhead and deck, and up to a point at the forward perpendicular not higher than the level of the forecastle deck (as illustrated in **figure 12-1**). However, if the value of the height denoted h_t in **figure 12-1** is smaller than the value of the height denoted h_b then h_t may be replaced by h_b in the available bow height.

(ii) Where the freeboard deck has sheer extending for less than 0.15L or has no sheer, by a line from the forecastle deck at side at 0.07L extended parallel to the base line to the forward perpendicular (as illustrated in **figure 12-2**).



$$h_t = Z_b\left(\frac{0.15L}{x_b}\right)^2 - Z_t$$

figure 12-1

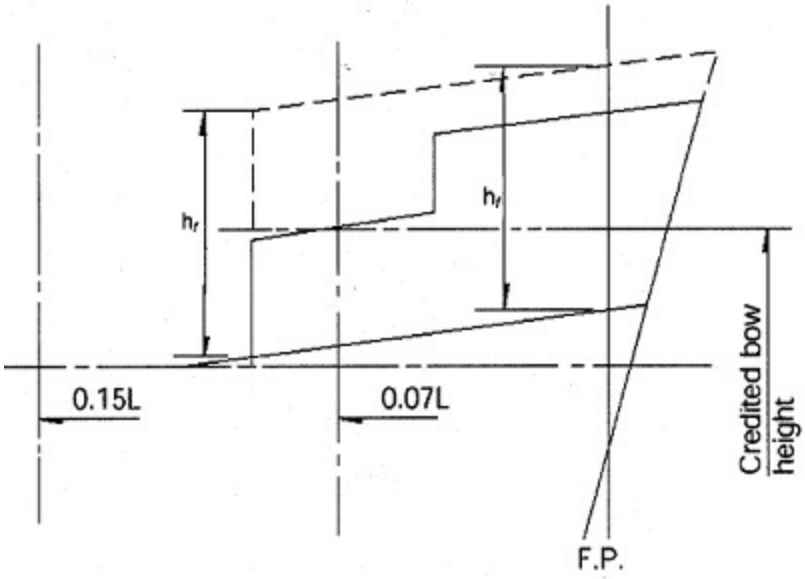


figure 12-2

hf = Half standard height of superstructure as defined in rule 8.

(5) All ships assigned a type .B. freeboard, other than oil tankers, chemical tankers and gas carriers, shall have additional reserve buoyancy in the fore end. Within the range of 0.15L abaft of the forward perpendicular, the sum of

the projected area between the summer load waterline and the deck at side (A1 and A2 in **figure 12-3**) and the projected area of an enclosed superstructure, if fitted, (A3) shall not be less than:

$$(0.15F_{min} + 4(L/3 + 10))L/1000\ m^2,$$

where:

F_{min} is calculated by: $F_{min} = (F_0 \times f_1) + f_2$;

F_0 is the tabular freeboard, in mm, taken from table B, corrected for sub-rule 4(5) or 4(6) of this schedule, as applicable;

f_1 is the correction for block coefficient given in sub-rule 4(11) of this schedule; and

f_2 is the correction for depth, in mm, given in **rule** 5 of this schedule .

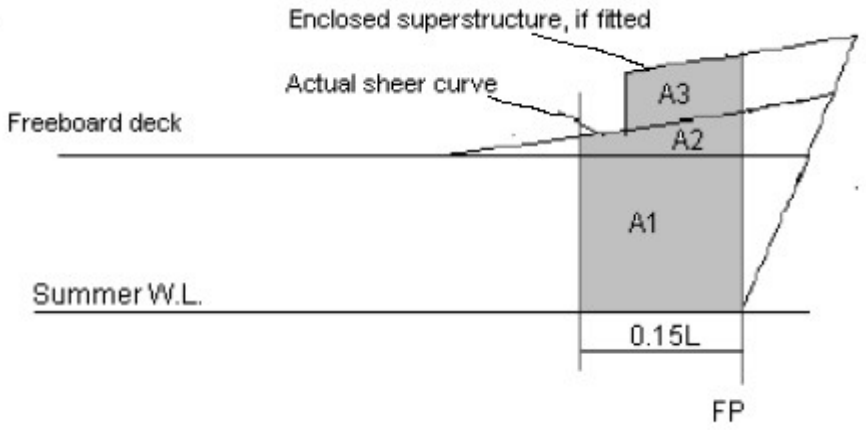


Figure 12-3

PART III Timber Freeboard

13. Summer timber freeboard:-

(1) There shall first be ascertained the freeboard appropriate to the ship under the provisions of sub-rules(1), **(2),** and (10) to (11) of rule 4, corrected as necessary in accordance with the provisions of rules 5 to 7 of this Schedule.

(2) Deduction for the effective length of superstructures shall be made from the freeboard obtained pursuant to sub-rule (1) in accordance with sub-rules 10(1) and 10(2) but substituting the following table 13-1 for the Table 'Percentage of Deduction for Type A and Type B ships'.

Table 13-1

	Total effective length of superstructure										
	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	20	31	42	53	64	70	76	82	88	94	100

Percentage at immediate lengths of superstructures shall be obtained by liner interpolation.

(3) The freeboard so far obtained pursuant to the preceding sub-rules shall then be corrected in accordance with rules 11 and 12 of this Schedule, and the freeboard so corrected shall be the Summer Timber Freeboard to be assigned to the ship.

14. Other timber freeboards:-

(1) The Winter timber freeboard shall be obtained by adding to the Summer timber free board one thirty sixth ($1/36^{th}$) of the summer timber draught of the ship.

(2) The Winter North Atlantic Timber freeboard shall be same as the Winter North Atlantic Freeboard assigned to the ship.

(3) The Tropical timber freeboard shall be obtained by deducting from the summer timber freeboard one forty eight ($1/48^{th}$) of the summer timber draught of the ship.

(4) The Fresh Water Timber freeboard shall, be obtained by deducting from the Summer Timber freeboard the quantity--

$\Delta/40T$ centimeters.

Where Δ is the displacement in salt water in metric tons at the waterline which will when load lines have been marked on the ship's side correspond to the Summer Timber load line, and T represents metric tons per centimetre immersion in salt water at that waterline.

In any case in which the displacement at the waterline cannot be ascertained the deduction shall be one forty eighth (1/48th) of the summer timber draught of the ship.

(5) Timber freeboards may be assigned to ships with reduced type .B. freeboards, provided the timber freeboards are calculated on the basis of the ordinary type .B.freeboard.

(6) The Timber Winter mark and/or the Timber Winter North Atlantic mark shall be placed at the same level as the reduced type .B. Winter mark when the computed Timber Winter mark and/or the computed Timber Winter North Atlantic mark fall below the reduced type .B. Winter mark..

PART IV Freeboard for other ships

15. Tugs: - The freeboard to be assigned to tugs shall be freeboards determined in accordance with provisions of Part II of this Schedule increased by such amounts as the Director General may direct in each case.

16. Ships without means of propulsion:

(1) A lighter, barge or other ship without independent means of propulsion shall be assigned a freeboard in accordance with the provisions of these rules. Barges which meet the requirements of rule 2(1) of first schedule and 3(4) of second schedule may be assigned type A. freeboards:

(2) The assigning authority should especially consider the stability of barges with cargo on the weather deck. Deck cargo can only be carried on barges to which the ordinary type .B. freeboard is assigned.

(3) However, in the case of barges which are unmanned, the requirements of rule 20 of the first schedule and rule 12 of the second schedule shall not apply.

(4) 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 a freeboard 25% less than those calculated in accordance with these rules.

17. Ships with special construction features: - The freeboard to be assigned to ships with constructional features such as to render freeboard calculated in accordance with the other Parts of this Schedule unreasonable or impracticable shall be especially determined by the Director General in each particular case.

18. Conditions for assigning freeboards less than minimum freeboard: The Director General of Shipping shall consider applications for the assignment of a freeboard reduced to 5/8 (Table B), ½ (Table B-60) or ½ (Table B-100) subject to a minimum freeboard of 150 mm (6 inches) and to the following conditions, namely:--

(1) The strength of the ship shall be adequate at the draught associated with the decreased freeboard;

(2) The ships shall be of the "hopper" type, i.e. fitted with bottom doors in the shell or having other similar means capable of quickly jettisoning the cargo under all sea-going conditions and in an emergency. The cargo releasing arrangements on ships assigned a freeboard less than 5/8 (Table B) should be capable of jettisoning sufficient cargo within 4 minutes to enable the requirements of sub-rule (5) below to be complied with. In each case details of the arrangements are to be submitted for examination and approval.

(3) The operational limits shall not normally exceed 20 miles from land.

(4) The intact stability criteria specified in Part I of the Third Schedule should be achieved at the proposed decreased freeboard.

(5) When a freeboard equivalent to ½ (Table B-60) is assigned, the ship shall be capable of surviving in a manner stated in sub-rule 4(4)(d) of Part II of Second Schedule after sustaining damage, to the total extent indicated in sub-rule 4(8) of Part II of the Second Schedule to any one compartment (including the engine room).

(6) When a freeboard equivalent to ½ (Table B-100) is assigned, the ship shall be capable of surviving in a manner specified in sub-clause 4(6)(a)(iii) of Part II of the Second Schedule after sustaining damage, to the total extent indicated in sub-rule 4(8) of Part II of the Second Schedule to the engine room or to any other two adjacent fore and aft compartments.

Note :- In the damage stability calculation it may be assumed that a proportion of the cargo is capable of being jettisoned immediately after the collision provided the cargo releasing arrangements are so designed that they will operate after the ship has sustained the total assumed damage.

(7) Draught indicators shall be fitted to ships requiring freeboards of ½ (B-60) or less.

(8) A special working load line mark in RED shall be marked on ship sides with disc 762 mms abaft normal marks, in all such cases.

19. Existing ships from 24 metre to 100 metres in length: Ships of length range 24 to 100 metres, engaged in harbour maintenance, dredgers, hoppers, barges, tugs and crafts engaged in service between ship and shore, or for domestic voyages along with coasts of India may continue to be assigned free boards, under the Indian Merchant Shipping (Load Line) Rules, 1979 :

Provided that,

(1) the conditions of assignment, more particularly the ones relating to hatch closing appliances, are brought up to the requirements of these rules as far as is reasonable and practicable ; and

(2) no increase in the summer draught corresponding to a decrease in the geometric freeboards is made under the terms of these rules.

20. Minimum bow height of coastal ships below 60 metres in length --- Ships engaged on the coasting trade of India lf less than 60 metres in length performing voyages during the course of which they are at no time more than 20 miles from the nearest land shall be required to have a minimum bow height which shall not be less than the aggregate of the tabular freeboard and the standard sheer at the forward perpendicular applicable to the ship:

Provided that the Director General may dispense with the requirement of minimum bow height where exceptional operational requirements are involved.

PART V Tabular Freeboard

The following is Freeboard Table A referred to in sub-rule (3) of rule 1 of Part I of this Schedule

TABLE A
FREEBOARD TABLE FOR TYPE "A" SHIPS

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)

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	720	185	2451	299	3258

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	2732	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	3882
113	1342	227	2849	341	3385
114	1359	228	2857	342	3387
115	1376	229	2865	343	3389
116	1392	230	2872	344	3992
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	263	3430
136	1736	250	3012	364	3432
137	1753	251	3018	365	3433

Note: Freeboard at intermediate lengths of ships shall be obtained by linear interpolation.

The following is Freeboard Table B referred to in sub-rule (3) of rule 1 of Part 1 of this Schedule.

TABLE B

FREEBOARD TABLE FOR TYPE "B" SHIP

Length of ship	Freeboard	Length of ship	Freeboard	Length of ship	Freeboard

(metres)	(millimetres)	(metres)	(millimetres)	(metres)	(millimetres)
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	4385
52	467	166	2640	280	4397
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	2835	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	4834
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	5035
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	5160
123	1750	237	3835	351	5170
124	1771	238	3849	352	5180
125	1793	239	3864	353	5190
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	5285
136	2021	250	4018	364	5294
137	2043	251	4032	365	5303

Note :- Freeboard at intermediate lengths of ship shall be obtained by linear.

THE THIRD SCHEDULE
STABILITY AND LOADING

PART I Criteria of Stability

1. The stability of the ship in all intended loading conditions shall be adequate at all drafts not submerging the appropriate freeboard marks. Unless otherwise required by the Director General having regard to the special design features and the service conditions of a ship, the stability of the ship will be considered satisfactory upon compliance with the following criteria or equivalent as prescribed in the IMO Intact Stability Code, as amended from time to time :-

(1) The area under the righting lever (GZ) curve shall not be less than:-

(a) 0.055 metre-radians upto an angel of 30 degrees;

(b) 0.09 metre-radians to an angle of either 40 degrees or an angle of downflooding Θ_f if that be less. The angle Θ_f is the angle at which the lower edges of any openings in the hull, superstructures or deckhouses, being openings which cannot be closed weathertight and which are likely to cause progressive flooding are immersed;

(c) 0.03 metre-radians between the angles of heel of 30 and 40 degrees or between 30 and Θ_f degrees, if Θ_f is less than 40 degrees.

(d) The righting lever (GZ) shall be at least 0.20 metre, at an angle of heel equal to or greater than 30 degrees.

(e) The maximum righting lever (GZ) should occur at an angle of heel not less than 25 degrees.

(f) The initial transverse metacentric height shall be not less than 0.15 meter.

(2) The Director General may allow a timber deck cargo ship to comply with such lesser criteria of stability than those of the preceding paragraph having fully reviewed the circumstances of cargo stowage and lashing and other service conditions.

(3) In addition to complying with the provisions of the above sub-rule 1 and 2, the ship master should also exercise due precaution and discretion as regards navigation, cargo stowage and lashing, etc.

(4) To assess if a ship complies with the stability criteria in sub-rule 1 and 2, the stability data shall be based on inclining test of that ship, as provided by the rule 31 of these rules, unless exempted by the same rule.

PART II Stability and Loading Conditions

2. The stability characteristics of at least the following loading and ballasting conditions should be duly investigated in order to ensure compliance with the criteria of stability laid down in Part I of this Schedule.

(1) Light Condition: If the ship has permanent ballast, the light condition should include two conditions, e.g. (i) light condition with such ballast, and (ii) light condition without such ballast.

(2) Ballast Conditions: These should include two conditions, e.g. (i) ballast departure condition with full stores, fresh water, fuel and other consumable stores but without cargo, and (ii) ballast arrival condition with only 10 per cent stores, fresh water fuel and other consumable stores.

(3) Standard Loading Conditions: These should include (i) the departure condition with the ship loaded to the summer load line with homogenous cargo filling all spaces available for cargo, except cargo spaces where this is clearly inappropriate, for example, in the case of cargo spaces in a ship which are intended to be used exclusively for the carriage of vehicles or of containers and (ii) the arrival condition with the ship similarly loaded but with only 10 per cent stores, fresh water, fuel and other consumable store.

(4) Service Loading Condition: These should include the departure and arrival conditions of additional loading conditions for which the ship is designed or which service conditions are desired by the ship owners.

3. For passenger ships, the full number of passengers and their luggage should be included in conditions (2) to (4) of rule 2 above,

   In passenger ships, the effect of the movement of passengers and the heeling of the ship during turning maneuvers shall also be duly examined having regard to the adverse effect on the stability of the ship.

4. Specific calculations and loading conditions for certain ship types may comply with the provisions of International Code on Intact Stability, 2008.

PART III Method and Form of Stability Calculations

5. For the purposes of Part VI of these rules relating to stability and loading the method of stability calculations and the form of the stability booklet should, so far as practicable, be in accordance with the following rules.

6. The stability book should include the following particulars:

(1) The ship's name, official number, port of registry, gross and register tonnages, principal dimensions, displacement, deadweight and draught to the summer load line, suitably stated in the beginning of the stability booklet.

(2) A profile view and if practicable, plan views of the ship drawn to scale showing with their names outlines of all main compartments, tanks, storerooms and accommodation spaces.

(3) General arrangement plans showing watertight compartments, closures, vents, downflooding angles, permanent ballast, allowable deck loadings and freeboard diagrams.

(4) The capacity and the positions of the vertical and longitudinal centers of gravity of compartments available for the carriage of cargo, fuel, stores, feed water, fresh water and water ballast. The sounding tables and free surface data for each tank.

(5) In the case of a vehicle ferry, the vertical centre of gravity of compartments for the carriage of vehicles shall be based on the estimated centers of gravity of the vehicles and not on the volumetric centers of compartments.

(6) The estimated total weight of (a) passengers and their effects and (b) crew and their effects, and the centers of gravity (longitudinal and vertical) of each such total weight. In determining such centers of gravity, passengers and crew shall be assumed to be distributed about the ship in the spaces they will normally occupy including the highest decks to which either or both have access.

(7) The estimated weight and the disposition and the centers of gravity of the maximum amount of deck cargo which the ship may reasonably be expected to carry on an exposed deck. The estimated weight shall include in the case of deck cargo likely to absorb water the estimated weight of water likely to be so absorbed and allowed for in arrival conditions, such weight in the case of timber deck cargo being taken to be 10 per cent by weight.

(8) The effect on stability of free surface in tanks in the ship in which liquids may be carried, including an example on how to correct the metacentric height for the free surface effect.

(9) General precautions for preventing unintentional flooding and any other necessary guidance for the safe operation of the ship under normal and emergency conditions.

(10) inclining test report for the ship, or where the stability data is based on a sister ship, the inclining test report of that sister ship along with the lightship measurement report for the ship in question.

7. The following diagrams or approved tabular statements in lieu thereof should be provided in the stability booklet:

(1) A diagram of the deadweight-displacement scale illustrating load line mark and the load lines with particulars of the corresponding freeboards, displacement metric tons and centimetre immersion, and deadweight tons corresponding to a range of mean draughts extending between the waterline representing the deepest load line and the water line of the ship in light condition.

(2) A diagram or tabular statement showing the hydrostatic particulars of the ship, including:-

(a) the heights of the transverse and longitudinal metacentre above base line.

(b) the positions of the center of buoyancy, both vertical and longitudinal,

(c) the positions of the longitudinal centers of floatation.

(d) the values of the moments to change trim by one centimetre.

(e) the values of the cross-sectional areas (Bonjean's Curves) and the water plane areas.

for a range of mean draughts extending at least between the waterline representing the deepest load line and the waterline of the ship in light condition.

Where a tabular statement issued the intervals between such draughts shall be sufficiently close to permit accurate interpolation. In the case of ships having raked keels, the same datum for the height of centers of buoyancy and metacentres shall be used as for the centers of gravity referred to in rule 6.

(3) A diagram of cross-curves of stability showing clearly the keel points on the inclined axis from which the righting levers are measured and the trim which

has been assumed. In the case of ships having raked keels where datum other than the top of the keel has been use, full information is to be provided as to its position.

(4) A sufficient number of cross- curves for an adequate range of the angles of inclination and each such curve extending over the displacement and trim range from the light condition of the ship to the deepest load line, should be provided sot that the statistical stability curved of righting levers over all positive ranges could be obtained with sufficient accuracy by interpolation.

(5) An illustrative example shall be given showing how to obtain a curve of righting levers (GZ) from the cross curves.

(6) information on loading restrictions, such as maximum KG or minimum GM curve or table that can be used to determine compliance with the applicable stability criteria;

8. The stability characteristics of each of the loading conditions required to be investigated in Part II of this schedule shall be represented in the stability booklet by the following diagrams and statements:

(1) A profile diagram of the ship drawn to a suitable small scale showing the dispositions of the main components of the deadweight;

(2) Suitable tabular statements including the lightweight, the disposition and moments of components of the deadweight, the final displacement, the corresponding position of the center of gravity, the metacentre, the free surface effects and the metacentric height duly corrected for free surface effect ;

9. In deriving the cross-curves of stability account may be taken of:-

(1) The stability and buoyancy provided by enclosed superstructure and efficient trunks, such structures being described in rules 8 and 9 of Second Schedule.

(2) The stability and buoyancy provided by the following structures may also be taken into account in deriving the cross-curves if the Director General of Shipping so approves, in each particular case, having regard to their location, integrity and means of closure.

(a) Superstructure located above the superstructure deck;

(b) Deck houses on the freeboard deck, whether wholly or in part only;

(c) Trunks and hatchway structure on or above freeboard deck.

(3) Additionally, if the Director General so approves, in the case of a ship carrying timber deck cargo, the volume of timber deck cargo or part thereof, may be taken into account in deriving a supplementary curve of stability appropriate to the ship when carrying such cargo.

(4) Where the buoyancy of a superstructure or any other structure is taken into account in the calculations of stability, suitable endorsement shall always be made on the cross-curves clearly indicating the extent of such inclusion. Notices shall also be conspicuously displayed near weathertight doors or any other special openings to the effect that these openings must be closed weathertight at sea on account of stability.

"FOURTH SCHEDULE"

CONDITIONS OF ASSIGNMENT

Issued by the Government of India

INTERNATIONAL CONVENTION ON LOAD LINES, 1966

RECORD OF CONDITIONS OF ASSIGNMENT LOAD LINE SURVEY

_____

Name of Ship . . . . . .

Port of Registry . . . . . .

Nationality . . . . . .

Distinctive Number or Letters . . . . . .

Shipbuilders . . . . . .

Yard Number . . . . . .

Date of Build/Conversion . . . . . .

Freeboard assigned as a ship of Type . . . . .

Classification . . . . . .

Date and place of initial survey . . . . . .

_____

A plan of suitable size may be attached to this report in preference to sketches on this page.

Disposition and dimensions of superstructures, trunks, deckhouses, machinery casings, extent of bulwarks, guardrails and wood sheathing on exposed deck, to be inserted diagrams and tables following: together with positions of hatchways, gangways, and other means for the protection of crew, cargo ports, bow and stern doors, side scuttles, ventilators, airpipes, companionways and other items that would affect the seaworthiness of the ship.

DOORWAYS IN SUPERSTRUCTURES, EXPOSED MACHINERY CASINGS AND DECKHOUSES PROTECTING OPENINGS IN FREEBOARD AND SUPERSTRUCTURES DECKS

(Continued)

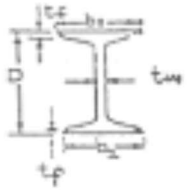
Location	Min Ht. Beam to Beam	Ref No. on Sketch or Plan	Number and Size of Openings	Height of Sills	Closing Appliances		
					Type & Material	Number of Clips	Is Door Openable From Both Sides?
In forecastle bulkhead							
In bridge forward bulkhead							
In bridge after bulkhead							
In raised quarter deck bulkhead							
In poop bulkhead							
In exposed machinery casings on freeboard or raised quarter deck							

DOORWAYS IN SUPERSTRUCTURES, EXPOSED MACHINERY CASINGS AND DECKHOUSES PROTECTING OPENINGS IN FREEBOARD AND SUPERSTRUCTURES DECKS

Location	Min Ht. Beam to Beam	Ref No. on Sketch or Plan	Number and Size of Openings	Height of Sills	Closing Appliances		
					Type & Material	Number of Clips	Is Door Operable From Both Sides?
In exposed machinery casings on superstructure decks							
In machinery casings within superstructures or deckhouses on freeboard deck							
In deckhouses in position 1 enclosing openings leading below freeboard deck							
In deckhouses in position 2 enclosing openings leading within enclosed superstructures or below freeboard deck							
In exposed pump room casings							

Are the bulkheads at exposed ends of enclosed superstructures and deckhouses of efficient strong construction?

HATCHWAYS AT POSITIONS 1 and 2 CLOSED BY PORTABLE COVERS AND SECURED WEATHERTIGHT BY TARPAULINS AND BATTENING DEVICES

Position and Reference No. on Sketch or Plan						
Dimension of Clear Opening at top of Coaming						
Height of Coamings Above Deck						
Portable Beams — Number						
 — Spacing						
B1 x tf						
D x tw						
B2 x tf						
Bearing Surface						
Means of Securing Each Beam						
Portable Covers — Material						
Thickness						
Direction Fitted						
Bearing Surface						
Spacing of Cleats						
Tarpaulins — No. of Layers						
Material						

Means of securing each section of covers:
Are wood covers fitted with galvanized end sides?

HATCHWAYS AT POSITIONS 1 & 2 CLOSED BY WEATHERTIGHT COVERS OF STEEL (OR OTHER EQUIVALENT MATERIAL)
FITTED WITH GASKETS AND CLAMPING DEVICES

Position and Reference No. on Sketch or Plan						
Dimension of Clear Opening At Top of Coaming						
Height of Coamings Above Deck						
Type of Cover or Patent Name						
Material						

Position and Reference No. on Sketch or Plan						
Dimension of Clear Opening At Top of Coaming						
Height of Coamings Above Deck						
Type of Cover or Patent Name						
Material						

MACHINERY SPACE OPENINGS AND MISCELLANEOUS OPENINGS IN FREEBOARD AND SUPERSTRUCTURE DECKS

Position and Reference No. on Sketch or Plan						
Dimensions						
Height of Coaming						
Material						
Cover How attached						
Number and spacing of toggles						
Position and Reference No. on Sketch or Plan						
Dimensions						
Height of Coaming						
Material						
Cover How attached						
Number and spacing of toggles						

VENTILATORS ON FREEBOARD AND SUPERSTRUCTURE DECKS (Positions 1 and 2)

Deck on which fitted	Number fitted	Coaming			Type (State Patent Name If Any)	Closing Appliances
		Dimensions	Height	Thickness		

Are ventilator coamings in excess of 900mm in height adequately supported?

AIRPIPES ON FREEBOARD, RAISED QUARTER AND SUPERSTRUCTURE DECKS

Deck on which fitted	Number fitted	Coaming			Type (State Patent Name If Any)	Closing Appliances
		Dimensions	Height	Thickness		

Are closing appliances of a type will prevent excessive pressure coming on tanks?

CARGO PORT AND OTHER SIMILAR OPENINGS

Position of Port	Dimension of Opening	Distance of Lower Edge from Freeboard Deck	Securing Devices	Remarks

SCUPPERS, INLETS AND DISCHARGES

(Continued)

State if scupper or discharge	Number	Pipe			From	Draining to	Vertical distance above top of keel			Number and material of discharge valves	Position of controls
							Discharge		Uppermost valve		
		Diameter	Thick-ness	Mate-rial			Outlet in hull	Inboard end			

S – Scuppers
D – Discharge

MS – Mild steel
CS – Cast steel
GM – Gun metal
Any other approved material to be designated

SD – Screw down
ANR – Automatic non-return
SD-ANR – Screw down automatic non-return

SCUPPERS, INLETS AND DISCHARGES

State if scupper or discharge	Number	Pipe			From	Draining to	Vertical distance above top of keel			Number and material of discharge valves	Position of controls
							Discharge		Uppermost valve		
		Diameter	Thick-ness	Mate-rial			Outlet in hull	In board end			

SIDE SCUTTLES

Position	Number fitted	Clear glass size	Fixed or opening	Material		Type of glass and thickness	Standard used and type no.
				Frame	Deadlight		

Indicate the vertical distance between the freeboard deck and the lower sill of the sidescuttle positioned at the greatest vertical distance below the freeboard deck.

FREEING PORTS

	Length of bulwark	Height of bulwark	Number and size of freeing ports each side	Total area each side	Required area each side
Freeboard deck After well					
Forward well					
Superstructure deck					

State fore and aft position of each freeing — After well

Port in relation to superstructure end bulkheads — Forward well

Particulars of shutters, bars, or rails fitted to freeing ports

Height of lower edge of freeing port above deck

SKETCH OF GUNWALE CONSTRUCTION AT JUNCTION OF DECK AND STEEL AND POSITION OF STATUTORY DECKLINE.

(Where special arrangements are made in way of obstructions such as Fender etc., those are to be indicated.)

PROTECTION OF CREW

State particulars of bulwarks or guardrails on freeboard and superstructure decks:

State details of lifelines, walkways, gangways or under deck passageways where required to be fitted:

TIMBER DECK CARGO FITTINGS

State particulars of uprights, sockets, lashing, guardrails and lifelines:

ANY OTHER SPECIAL LOADLINE FEATURES (Not Covered Elsewhere In This Report)

The conditions of assignment shown on this form are a record of arrangements and fittings provided on the ship and are in accordance with the requirements of the relevant regulations of International Convention on Loadlines, 1966.

Surveyor

Date

The Fifth Schedule

Certificate forms

International Load Line Certificate

Issued under the provisions of the International Convention on Load Lines, 1966 as modified by the Protocol of 1988 relating thereto, under the authority of the Government of India by the Director General of Shipping.

Name of ship

Distinctive number or letters

Port of Registry

Length (L) as defined in article 2(8) (metres)

Gross Tonnage

IMO number

Freeboard assigned as A new ship/An existing ship

Type of ship Type A/Type B with reduced/increased freeboard

Freeboard from deck line		**Load Line**
Tropical	mm (T)	mm above (S)
Summer	mm (S)	Upper edge of line through centre of ring
Winter	mm (W)	mm below (S)
Winter North Atlantic	mm (WNA)	mm below (S)
Timber Tropical	mm (LT)	mm above (LS)
Timber Summer	mm (LS)	mm above (S)
Timber Winter	mm (LW)	mm below (LS)

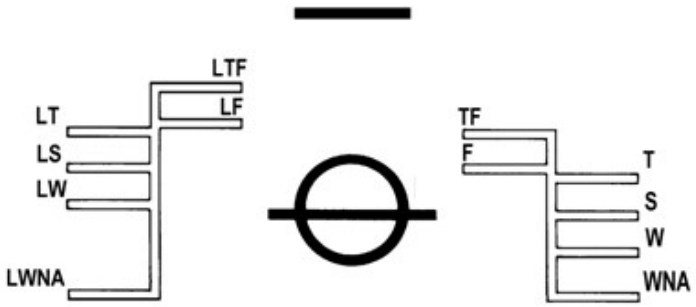
Timber Winter North Atlantic mm (LWNA) mm below (LS)

Allowance for fresh Water for all freeboards other than timber _____ mm

Allowance for Fresh Water for timber freeboards _____ mm

The upper edge of the deck line from which these freeboards are measured is _____ mm

_____deck at side.



This is to Certify:

1. That the ship has been surveyed in accordance with the requirements of Article 14 of the Convention;
2. That the survey showed that the freeboards have been assigned and load lines shown on page 1 have been marked in accordance with the Convention.

This certificate is valid until _____

Subject to annual surveys in accordance with Article 14(1) (c) of the Convention.

Issued at _____ on _____

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

_____

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 fresh water allowance shown above. Where the density is other than unity, the allowance shall be made proportional to the difference between 1.025 and the actual density.
3. This certificate must be kept framed and posted up in a conspicuous place on board the ship, so long as the certificate remains in force and the ship is in use.
4. Insert the date of expiry as specified by the Director General in accordance with article 19(1) of the Convention. The day and the month of this date correspond to the anniversary date as defined in article 2(9) of the Convention, unless amended in accordance with article 19(8) of the Convention.
5. Completion date of the survey on which this certificate is based: dd/mm/yyyy.

ENDORSEMENT FOR ANNUAL SURVEY

This is to certify that, at an annual survey required by article 14(1)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey

Place of Survey

_____

Date Surveyor

Annual Survey

Place of Survey

_____

Date Surveyor

Annual Survey

Place of Survey

_____

Date Surveyor

Annual Survey

Place of Survey

_____

Date Surveyor

ANNUAL SURVEY IN ACCORDANCE WITH ARTICLE 19(8)(C)

This is to certify that, at an annual survey in accordance with article 19(8)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey

Place of Survey

_____

__

Date Surveyor

Note: Official stamp to be put for each endorsement

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN 5 YEARS AND WHERE ARTICLE 19(3) APPLIES

The ship complies with the relevant requirements of the Convention, and the Certificate shall, in accordance with Article 19(3) of the Convention, be accepted as valid until……..

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND ARTICLE 19(4) APPLIES

The ship complies with the relevant requirements of the Convention, and this Certificate shall, in accordance with Article 19(4) of the Convention, be accepted as valid until……

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE ARTICLE 19(5) OR 19(6) APPLIES

This Certificate shall, in accordance with Article 19(5) / 19(6) of the Convention, be accepted as valid until……..

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE ARTICLE 19(8) APPLIES

In accordance with Article 19(8) of the Convention, the new anniversary date is…….

Place of Survey

_____

__

Date Surveyor

In accordance with Article 19(8) of the Convention, the new anniversary date is……..

Place of Survey

_____

__

Date Surveyor

Note: Official stamp to be put for each endorsement

India Load Line Certificate

Issued under the provisions of the Merchant Shipping (Load Line) Rules, 2012, by Government of India

Name of Ship	**Distinctive Number or Letters**	**Port of Registry**	**Length (L) as defined by rules made under section 311 of the Merchant Shipping Act, 1958**	**Gross Tonnage**

Freeboard Assigned as*	Type of Ship*
A new ship	Type “A”
An existing ship	Type “B”
	Type “B” with reduced freeboard
	Type “B” with increased freeboard
*Delete whatever is inapplicable	

Freeboard from: Deck Line		**Load Line**
Tropical	mm (T)	mm above (S)
Summer	mm (S)	Upper edge of line through centre of ring
Winter	mm(W)	mm below (S)

Allowance for fresh water for all freeboards……..mm

Note:- Freeboard and load line which is not applicable need not be entered on the certificate

The upper edge of the deck line from which freeboard are measured is ……..mm

…… deck at side.

This is to certify that the ship has been surveyed and the freeboards and load lines shown above have been assigned in accordance with the rules made under section 311 of the Merchant Shipping Act, 1958.

This Certificate is valid until ……

Subject to periodical inspection in accordance with the provisions of the rules made under section 311 of the Merchant Shipping Act, 1958.

Completion date of the survey on which this certificate is based: ……..

Issued at …….. on the ……. Day of ……..20

_____

This is to certify that at a periodical inspection required by the rules made under section 311 of the Merchant Shipping Act, 1958; this ship was found to comply with the relevant provisions of the said rules.

Place …….. Date ……

……

Surveyor

Place …….. Date ……

……

Surveyor

Place …….. Date ……

……

Surveyor

Place …….. Date ……

……

Surveyor

Note: -

(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 the difference between 1.025 and the actual density.

INTERNATIONAL LOAD LINE EXEMPTION CERTIFICATE

Issued under the provisions of the International Convention on Load Lines, 1966 as modified by the Protocol of 1988 relating thereto, under the authority of the Government of India by the Director General of Shipping.

Name of ship

Distinctive number or letters

Port of Registry

Length (L) as defined in article 2(8) (metres)

Gross Tonnage

IMO number

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)* of the Convention referred to above.

* Delete whichever is inapplicable.

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 to annual surveys in accordance with Article 14(1) (c) of the Convention.

Issued at ……. on ……..

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

_____

ENDORSEMENT FOR ANNUAL SURVEY

This is to certify that, at an annual survey required by article 14(1)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey
Place of Survey

_____
__

Date Surveyor

Annual Survey
Place of Survey

_____
__

Date Surveyor

Annual Survey
Place of Survey

_____
__

Date Surveyor

Annual Survey
Place of Survey

_____
__

Date Surveyor

ANNUAL SURVEY IN ACCORDANCE WITH ARTICLE 19(8)(C)

This is to certify that, at an annual survey in accordance with article 19(8)(c) of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey

Place of Survey

_____

__

Date Surveyor

Note: Official stamp to be put for each endorsement

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN 5 YEARS AND WHERE ARTICLE 19(3) APPLIES

The ship complies with the relevant requirements of the Convention, and the Certificate shall, in accordance with Article 19(3) of the Convention, be accepted as valid until……..

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND ARTICLE 19(4) APPLIES

The ship complies with the relevant requirements of the Convention, and this Certificate shall, in accordance with Article 19(4) of the Convention, be accepted as valid until…….

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE ARTICLE 19(5) OR 19(6) APPLIES

This Certificate shall, in accordance with Article 19(5) / 19(6) of the Convention, be accepted as valid until……..

Place of Survey

_____

__

Date Surveyor

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE ARTICLE 19(8) APPLIES

In accordance with Article 19(8) of the Convention, the new anniversary date is…….

Place of Survey

_____

__

Date Surveyor

In accordance with Article 19(8) of the Convention, the new anniversary date is……..

Place of Survey

_____

__

Date Surveyor

Note: Official stamp to be put for each endorsement

THE SIXTH SCHEDULE

Zones, Areas and Seasonal Periods

1. The zones and areas in this Schedule are, in general, based on the following criteria:

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

   Tropical - not more than 1 per cent winds of force 8 Beaufort (34 knots) or more. Not more than one tropical storm in 10 years in an area of 5^0 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 Schedule to illustrate the zones and areas defined below.

2. 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 50^0W from the coast of Greenland to latitude 45^0N, thence the parallel of latitude 45^0N, thence the parallel of latitude 45^0N to longitude 15^0W, thence the meridian of longitude 15^0W to latitude 60^0N, thence the parallel of latitude 60^0N 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 $68^0$30'W from the coast of the United States to latitude 40^0N, thence the rhumb line to the point latitude 36^0N, longitude 73^0W, thence the parallel of latitude 36^0N to longitude 25^0W and thence the rhumb line to Cape Toriñana.

Excluded from this zone are the North Atlantic Winter Seasonal Zone I and the Baltic Sea bounded by the parallel of the 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*

a) The boundary of the North Atlantic Winter Seasonal Area is-

the meridian of longitude $68^0$30'W from the coast of the United States to latitude 40^0N, thence the rhumb line to the southernmost intersection of the meridian of longitude 61^0W 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*

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

the parallel of latitude 50N from the east coast of the USSR to the west coast of Sakhalin, thence the west coast of Sakhalin to the southern extremity of Kril'on, thence the rhumb line to Wakkanai, Hokkaido, Japan, thence the east and south coasts of Hokkaido to longitude 145^0E, thence the meridian of longitude 145^0E to latitude 35^0N, thence the parallel of latitude 35^0N to longitude 150^0W 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.

3. Southern Winter Seasonal Zone

1) 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 34^0S, longitude 50^0W, thence the parallel of latitude 34^0S to longitude 17^0E, thence the rhumb line to the point latitude $35^0$10'S, longitude 20^0E, thence the rhumb line to the point latitude 34^0S, longitude 28^0E, thence along the rhumb line to the point latitude $35^0$30'S, longitude 118^0E, 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 47^0S, longitude 170^0E, thence along the rhumb line to the point latitude 33^0S, longitude 170^0W, and thence the parallel of latitude 33^0S to the west coast of the American continent.

Seasonal periods:

WINTER: 16 April to 15 October

SUMMER: 16 October to 15 April.

4. Tropical Zone

1) *Northern boundary of the Tropical Zone*

The northern boundary of the Tropical Zone is-

the parallel of latitude 13^0N from the east coast of the American continent to longitude 60^0W, thence the rhumb line to the point latitude 10^0N longitude 58^0W, thence the parallel of latitude 10^0N to longitude 20^0W, thence the meridian of longitude 20^0W to latitude 30^0N and thence the parallel of latitude 30^0N to the west coast of Africa; from the east coast of Africa the parallel of latitude 8^0N to longitude 70^0E, thence the meridian of longitude 70^0E to latitude 13^0N, thence the parallel of latitude 13^0N to the west coast of India; thence the south coast of India to latitude $10^0$30'N on the east coast of India, thence the rhumb line to the point latitude 9^0N, longitude 82^0E, thence the meridian of longitude 82^0E to latitude 8^0N, thence the parallel of latitude 8^0N to the west coast of Malaysia, thence the coast of South-East Asia to the east

coast of Vietnam at latitude 10^0N, thence the parallel of latitude 10^0N to longitude 145^0E, thence the meridian of longitude 145^0E to latitude 13^0N and thence the parallel of latitude 13^0N 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 40^0W 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 20^0S to the west coast of Madagascar, thence the west and north coasts of Madagascar to longitude 50^0E, thence the meridian of longitude 50^0E to latitude 10^0S, thence the parallel of latitude 10^0S to longitude 98^0E, 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 11^0S to the west side of Cape York; from the east side of Cape York the parallel of latitude 11^0S to longitude 150^0W, thence the rhumb line to the point latitude 26^0S, longitude 75^0W, and thence the rhumb line to the west coast of the American continent at latitude 30^0S.

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 45^0E. 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 59^0E.

c) The area bounded by the parallel of latitude 22^0S from the east coast of Australia to the Great Barrier Reef, thence the Great Barrier Reef to

latitude 11^0S. The northern boundary of the area is the southern boundary of the Tropical Zone.

5. 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 20^0N and thence the parallel of latitude 20^0N to longitude 20^0W;

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 45^0E in the Gulf of Aden, the coast of South Arabia and the meridian of longitude 59^0E 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 20^0S;

on the east by the rhumb line from the point latitude 20^0S, longitude 50^0E, to the point latitude 15^0S, longitude $51^0$30'E, and thence by the meridian of longitude $51^0$30'E to latitude 10^0S.

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 15^0S from longitude $51^0$30'E, to longitude 120^0E and thence the meridian of longitude 120^0E to the coast of Australia;

on the west by the meridian of longitude $51^0$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 Vietnam and China from latitude 10^0N 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 10^0N;

on the south by the parallel of latitude 10^0N.

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 25^0N;

on the west by the meridian of longitude 160^0E;

on the south by the parallel of latitude 13^0N;

on the east by the meridian of longitude 130^0W.

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 123^0W from the coast of the American continent to latitude 33^0N and by the rhumb line from the point latitude 33^0N, longitude 123^0W, to the point latitude 13^0N, longitude 105^0W;

on the south by the parallel of latitude 13^0N.

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 11^0S.

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 150^0W, thence by the meridian of longitude 150^0W to latitude

20^0S and thence by the parallel of latitude 20^0S 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.

6. 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 $68^0$30'W from the coast of the United States to latitude 40^0N and thence by the rhumb line to the point latitude 36^0N, longitude 73^0W;

on the south by the parallel of latitude 36^0N; is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 November to 31 March

SUMMER: 1 April to 31 October.

7. 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 44^0N 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 3^0E from the coast of Spain to latitude 40^0N;

on the south by the parallel of latitude 40^0N from longitude 3^0E to the west coast of Sardinia;

on the east by the west and north coasts of Sardinia from latitude 40^0N to longitude 9^0E, thence by the meridian of longitude 9^0E to the south coast of Corsica, thence by the west and north coasts of Corsica to longitude 9^0E 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 50^0N 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 50^0N and the rhumb line from the east coast of Korea at Latitude 38^0N to the west coast of Hokkaido, Japan, at latitude $43^0$12'N is a Winter Seasonal Area.

Seasonal periods:

WINTER: 1 December to 28/29 February

SUMMER: 1 March to 30 November.

8. The Winter North Atlantic Load Line

The part of the North Atlantic referred to in sub-rule 2(4) of second schedule comprises:

1) that part of the North Atlantic Winter Seasonal Zone II which lies between the meridians of 15W and 50W;
2) the whole of the North Atlantic Winter Seasonal Zone I, the Shetland Islands to be considered as being on the boundary.