LEGAL NOTICE NO. 3

REPUBLIC OF TRINIDAD AND TOBAGO

THE SHIPPING ACT, 1987

REGULATIONS

MADE BY THE MINISTER OF WORKS AND TRANSPORT UNDER SECTION 280 OF THE SHIPPING ACT

THE SHIPPING (LOAD LINE) REGULATIONS, 1992

Citation and commencement

1. (1) These Regulations may be cited as the Shipping (Load Line) Regulations, 1992.

(2) These Regulations come into operation on the 1st day of June, 1992.

PART I

GENERAL

Definitions

2. In these Regulations—

"Act" means the Shipping Act, 1987;

"Administration" means the Government of the State whose flag the ship is flying;

"amidships" means the middle of the ship's length (L);

"Assigning Authority" means *the Maritime Services Division* or any person authorised as such by the Minister for the purposes of these Regulations and includes in particular, where so authorised, Lloyd's Register of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd and the American Bureau of Shipping;

"breadth" and the symbol (B) in relation to a ship means the maximum breadth of the ship measured amidships to the moulded line of the frame in the case of a ship having a metal shell, or to the outer surface of the hull in the case of a ship having a shell of any other material;

"Convention ship" means a load line convention ship as defined in section 277 of the Act;

"Convention country" means a convention country as defined in section 277 of the Act;

"deck cargo regulations" means the Shipping (Deck Cargo) Regulations, 1992;

"existing ship" means a ship which is not a new ship;

"freeboard" means the distance measured vertically downwards amidships from the upper edge of the deck-line described in regulation 23 to the position at which the upper edge of the load line appropriate to the freeboard is to be marked;

"freeboard deck" in relation to a ship means the deck from which the freeboards assigned to the ship are calculated, being either—

(a) the uppermost complete deck exposed to weather and sea, which has permanent means of closing all openings in its weather portions, and below which all openings in the sides of the ship are fitted with permanent means of watertight closing; or

(b) at the request of the owner and subject to the approval of the Minister, a deck lower than that described in paragraph *(a)*, subject to its being a complete and permanent deck which is continuous both—

(i) in a fore and aft direction at least between the machinery space and peak bulk-heads of the ship; and

(ii) athwartships;

"length" and the symbol (L) in relation to a ship means the greater of the following distances:

(a) the distance between the fore side of the stem and the axis of the rudder stock; or

(b) a distance measured from the fore side of the stem, being ninety-six per cent of the distance between that point and the aft side of the stern;

"Load Line Certificate" means a Load Line Certificate issued under these Regulations;

"Load Line Convention" means Load Line Convention as defined in section 277 of the Act;

"moulded depth" in relation to a ship means the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side, save that—

(a) in the case of wood or composite ship, it shall be measured from the lower edge of the keel rabbet;

(b) if the form at the lower part of the midship section of the ship is of a hollow character, or if thick garboards are fitted, it shall be measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel;

(c) if the case of a ship having rounded gunwales, it shall be measured to the point of intersection of the moulded lines of the deck and side shell plating, the lines extending as though the gunwale were of angular design;

(d) if 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, it shall be measured to a line of reference from the lower part of the deck along a line parallel to the raised part of the deck;

"new ship" means a ship whose keel is laid or which is at a similar stage of construction on or after—

(a) in the case of a ship registered in or flying the flag of a State other than Trinidad and Tobago which is a Convention country, the date from which it is declared that the Government of that State has ratified or acceded to the Load Line Convention, or that it is a State to which that Convention applies;

(b) in the case of any other ship the 21st July, 1968;

"sailing ship" means a ship designed to carry sail, whether as the sole means of propulsion or as a supplementary means;

"Surveyor" means a surveyor appointed by an Assigning Authority.

Application

3. These Regulations shall apply to every Trinidad and Tobago ship other than—

(a) ships of War;

(b) pleasure yachts; and

(c) fishing vessels.

PART II

Appropriate Load Lines and Zones

Appropriate load lines

4. Subject to regulations 6 to 9, the load line appropriate to a ship shall be—

(a) the Summer load line when the ship is in a summer zone, excluding any part of such a zone which is to be regarded as a seasonal area in relation to the ship;

(b) the Tropical load line when the ship is in the tropical zone; and

(c) when the ship is in a seasonal zone or area, including any part of a summer zone which is to be regarded as a

seasonal area in relation to the ship, the Summer load line, the Winter load line or the Tropical load line according to whether the seasonal period applicable in that zone or area to that ship is respectively summer, winter or tropical.

Applicable zones, areas and periods Second Schedule

5. The zones, the seasonal zones, seasonal areas and seasonal periods applicable to a ship, shall be those set out in the Second Schedule and shown by way of illustration on the Chart annexed to these Regulations.

Load line of ship one hundred metres or less

6. In the case of a ship of one hundred metres or less in length the appropriate load line shall be the Winter North Atlantic Load Line in—

(a) the North Atlantic Winter Seasonal Zone I as described in paragraph 1 of the Second Schedule;

(b) so much of the North Atlantic Winter Seasonal Zone II, as so described, as lies between the meridians of longitude of 15° 00' West and 50° 00' West,

during the winter seasonal periods respectively applicable in those zones.

Load line of sailing ship

7. In the case of a sailing ship the appropriate load line shall, except in circumstances in which regulation 6 applies, be the Summer load line.

Load line of ship with all seasons load line

8. In the case of a ship marked with an All Seasons load line in accordance with regulation 38 that load line shall be the appropriate load line in all circumstances.

Load line of ship with timber load line

9. In the case of a ship marked with Timber load lines and carrying timber deck cargo in accordance with the requirements of the deck cargo regulations, the load line to be observed in any particular circumstances shall be the Timber load line corresponding to the load line which would be applicable in those circumstances under regulations 4 to 8 if the ship were not so marked.

PART III

Surveys and Certificates

Application for survey

10. An application for the survey of a ship for the purposes of assignment of freeboard and for the issue of the load line certificate to the ship shall be made to the Assigning Authority by or on behalf of the owner of the ship and where the Assigning Authority is not the Maritime Services Division the owner or his representative shall forward a copy of the application to the Director of Maritime Services.

Production of documents and information

11. The owner of the ship or his representative shall furnish to the Assigning Authority such plans, drawings, specifications and other documents and information relating to the design and construction of the ship as the Assigning Authority may require.

Load line surveys

12. (1) After receipt of the application and the documents together with other relevant information required by regulation 11, the Assigning Authority shall cause the ship to be surveyed by a surveyor in order to ascertain—

(a) whether the ship complies with such of the requirements of Part V and the Fourth Schedule as are applicable; and Fourth Schedule

(b) what other data is required—

(i) for the determination of the freeboard which is to be assigned to the ship in accordance with Part VI and the Fifth Schedule; and Fifth Schedule

(ii) to enable the stability information to be supplied to the master of the ship pursuant to Part VII of these Regulations and Part III of the Seventh Schedule. Seventh Schedule

(2) In the course of the survey of a ship pursuant to sub-regulation (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-regulation (1), and any test pertaining to the stability of a ship shall be subject to the requirements of Parts I and II of the Seventh Schedule.

(3) The owner or any other person on his behalf applying for the survey of the ship under regulation 10 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.

Report of survey

13. (1) On completion of the survey referred to in regulation 12 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 regulation 12.

(2) The report of survey shall be accompanied by—

(a) the Record of Particulars, in the form set out in the Third Schedule, complying with the requirements of regulation 34; and Third Schedule

(b) the computations of freeboard complying with the requirements of Part VI and the Fifth Schedule.

(3) In the case of any ship which is required to comply with the requirements of Part I of the Seventh Schedule relating to stability the

surveyor shall furnish to the Assigning Authority, in the form set out in the Tenth Schedule, such information as may be necessary to determine whether the ship complies with these requirements.

Tenth Schedule

(4) The Assigning Authority shall determine whether or not the ship complies with the requirements referred to in subregulation (3) and if she so complies the stability shall be approved by the Maritime Services Division or by the Assigning Authority where the Minister so directs.

Assignment of freeboards

14. (1) The Assigning Authority shall, if satisfied on scrutiny of the report of survey that the ship complies with the applicable requirements of Part V and the Fourth Schedule, assign freeboards to the ship which have been determined in accordance with Part VI and the Fifth 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 IV;

(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 Particulars.

(3) Where the Assigning Authority is not the Maritime Services Division then the Assigning Authority shall forward to the Director of Maritime Services a copy of the documents and information specified in subregulation (2).

Load line Certificates

15. (1) Subject to regulation 20 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 regulation 14, issue either an International Load Line Certificate (1966) or a Trinidad and Tobago Load Line Certificate as may be required by section 282 of the Act, in the form set out for such Certificates in the First Schedule.

First Schedule

(2) Where the Assigning Authority is not the Maritime Services Division then the Assigning Authority shall forward to the Director of Maritime Services a copy of the Load Line Certificate issued to the ship.

Period of validity

16. Every Load Line Certificate issued under these Regulations 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 regulation 12 and 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.

Extension of Load Line Certificates

17. (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 for the issue of a new certificate to take effect on the expiry date of the current certificate, the Assigning Authority may—

(a) if satisfied, following scrutiny of the surveyor's report that the ship complies with the applicable requirements of Part V and of the Fourth Schedule relating to conditions of assignment; and

(b) if satisfied that the ship complies with the requirements of the Fourth and Seventh Schedules, as applicable, relating to stability,

extend the validity of the current certificate of the ship for a period not exceeding five months, if it is considered that it is not reasonably practicable to issue a new certificate and in every such case a new certificate shall be issued after the date on which the extended certificate expires.

(2) No extension granted under subregulation (1) shall have effect unless particulars of the date to which the period of validity is extended, together with particulars of the place at and the date on which such extension was so given, are endorsed by the Assigning Authority on the current certificate.

(3) The period of validity of any Load Line Certificate coming into effect immediately on the expiry of a certificate extended pursuant to this regulation shall not exceed a period of five years commencing on the date of completion of the survey referred to in subregulation (1).

Cancellation

18. (1) The Minister may cancel a Load Line Certificate—

(a) if satisfied, whether by a report from the Assigning Authority or otherwise, that—

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

(ii) the structural strength of the ship is lowered to such an extent that the ship is unsafe; or

(iii) information on the basis of which freeboards where assigned to the ship was incorrect in a material particular;

(b) if the certificate is not endorsed in accordance with the requirements of regulation 19 to show that the ship has

been inspected in accordance with the requirements of that regulation;

(c) if a new certificate is issued in respect of the ship;

(d) if the ship was registered in Trinidad and Tobago when the certificate was issued and has since ceased to be registered.

(2) In every such case the Minister shall notify the owner of the ship in writing of the cancellation specifying the grounds for cancellation and the date on which it is to take effect.

Periodical inspection of ships

19. (1) Every ship in respect of which a Load Line Certificate is in force shall be periodically inspected by a surveyor in accordance with this regulation 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 the crew's quarters in the ship are in an effective condition; and

(b) no changes have been made or taken place in the hull of superstructures of the ship such as to render no longer accurate, data on the basis of which freeboards were assigned to the ship.

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

(3) The surveyor, referred to in subregulation (2), may in the course of any such inspection require the carrying out of tests considered by him to be necessary to establish that the ship complies with the requirements of subregulation (1).

(4) Inspection of a ship pursuant to this regulation shall be carried out on or within three months before or after each anniversary of the date of completion of the survey leading to the issue of the certificate and, unless the Minister otherwise consents, the intervals between inspections shall not be less than nine months or more than fifteen months.

(5) The Surveyor, if satisfied after inspection that the ship complies with the requirements of subregulation (1), shall endorse a record of the inspection and of the fact—

(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 a Trinidad and Tobago Load Line Certificate, that the ship was found to comply with the relevant provisions of these Regulations,

on the Load Line Certificate in the space provided, specifying the Assigning Authority by which he was appointed to carry out the inspection.

Exemption and Exemption Certificate

20. (1) Where the Minister exempts any ship pursuant to section 287 of the Act, the Director shall issue in respect of such ship an International Load Line Exemption Certificate or a Trinidad and Tobago Load Line Exemption Certificate in the form set out for such certificates in the First Schedule.

(2) Save in so far as the nature and terms of any such exemption require to the contrary, regulations 10 to 14 and regulations 16 to 19 shall apply to any ship so exempted and to any Exemption Certificate so issue to any such ship in the like manner as they apply to any other ship except that—

(a) references in the regulations to the Assigning Authority shall be deemed to be references to the Minister; and

(b) instead of as provided in regulation 19(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.

PART IV

Load Lines and Marks

Appropriate marks

21. In this Part the expression "the appropriate marks" in relation to a ship means the load lines, the deck line and the load line mark directed to be marked on the ship pursuant to regulation 14.

Marking

22. On receipt from the Assigning Authority of the particulars and directions referred to in regulation 14, the owner of the ship shall cause the appropriate marks to be made on each side of the ship in accordance with the directions and the requirements of this Part.

Deck-line

23. (1) The deck-line shall consist of a horizontal line 300 millimetres in length and 25 millimetres in width and shall be marked amidships on each side of the ship in accordance with subregulations (2) and (3) so as to indicate the position of the freeboard deck.

(2) Subject to subregulation (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 outwards of the upper surface of the freeboard deck, or of any sheathing of that deck, intersects the outer surface of the shell of the ship as shown in Figure 1 of the Eleventh Schedule.

Eleventh Schedule

(3) Where the design of the ship or other circumstances render it, in the opinion of the Assigning Authority, impracticable to mark the deck-line in accordance with subregulation (2), the Authority may include in the directions given pursuant to regulation 14 a direction that it may be marked by reference to another fixed point in the ship as near as practicable to the position described in subregulation (2).

Load line mark

24. (1) The load line mark shall consist, as shown in Figure 2 of the Eleventh Schedule, 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 centre of the ring.

(2) The centre of the ring, referred to in subregulation (1), shall be marked amidships vertically below the deck-line, so that, except as otherwise provided in regulation 38, the distance from the centre of the ring to the upper edge of the deck-line is equal to the Summer Freeboard assigned to the ship.

Load lines

25. (1) Load Lines as described in this regulation and regulation 26 indicate the maximum depth to which a ship marked therewith may be loaded in the circumstances described in regulations 4 to 9 and the Second Schedule.

(2) Except as otherwise provided in subregulation (4), regulation 26 and regulation 38, load lines shall consist, as shown in Figure 2 of the Eleventh Schedule, of horizontal lines each 230 millimetres 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 centre of the ring of the load line mark and at right angles to that line, and individual load lines shall be as follows:

(a) the Summer Load Line, which shall extend forward of the vertical line and be marked S, and shall correspond horizontally with the line passing through the centre of the ring of the load line mark;

(b) the Winter Load Line, which shall extend forward of the vertical line and be marked W;

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

(d) the Tropical Load Line, which shall extend forward of the vertical line and be marked T;

(e) the Fresh Water Load Line which shall extend abaft the vertical line and be marked F;

(f) the Tropical Fresh Water Load Line, which shall extend abaft the vertical line and be marked TF.

(3) The maximum depth of loading referred to in subregulation (1) shall be the depth indicated by the upper edge of the appropriate load line.

(4) In the case of a sailing ship—

(a) the Summer Load Line shall consist of the line passing through the centre of the ring of the load line mark; and

(b) the Winter North Atlantic Load Line and Fresh Water Load Line only shall be marked on the ship as shown in Figure 4 of the Eleventh Schedule.

Timber Load Lines

26. (1) Timber Load Lines shall consist, as shown in Figure 3 of the Eleventh Schedule, of horizontal lines of the dimensions specified in respect of such lines in regulation 25, extending abaft or forward of a vertical line of the dimensions specified in respect of such a line in that regulation, marked 540 millimetres abaft the centre of the ring of the Load Line mark and at right angles to that line.

(2) Individual Timber Load Lines shall be as follows:

(a) the Summer Timber Load Line, which shall extend abaft the vertical line referred to in subregulation (1) and be marked LS;

(b) the Winter Timber Load Line, which shall extend abaft the vertical line and be marked LW;

(c) the Winter North Atlantic Timber Load Line, which shall extend abaft the vertical line and be marked LWNA;

(d) the Tropical Timber Load Line, which shall extend abaft of the vertical line and be marked LT;

(e) the Fresh Water Timber Load Line, which shall extend forward of the vertical line and be marked LF;

(f) the Tropical Fresh Water Timber Load Line, which shall extend forward of the vertical line and be marked LTF.

(3) The maximum depth of loading referred to in regulation 25(1) shall be the depth indicated by the upper edge of the appropriate Timber Load Line.

Appropriate load line

27. The appropriate load line in respect of a ship at any particular place and time shall be ascertained in accordance with regulations 4 to 9 and the Second Schedule.

Position of load lines

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

Method of marking

29. (1) The appropriate marks shall be marked on each side of the ship in accordance with the following requirements in such a manner as to be plainly visible:

(a) if the sides of the ship are of metal, the appropriate marks shall be cut in, centre punched or welded;

(b) if the sides of the ship are of wood, the marks shall be cut into the planking to a depth of not less than three millimetres;

(c) if the sides are of other materials to which the foregoing methods of marking cannot effectively be applied, the marks shall be permanently affixed to the sides of the ship by bonding or some other effective method.

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

Authorization of removal, etc., of appropriate marks

30. After the appropriate marks have been made on a ship, the marks may not be concealed, removed, altered, defaced or obliterated except under the authority of an Assigning Authority.

Mark of Assigning Authority

31. (1) The mark of the Assigning Authority as described in subregulation (2) may be made 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) The Assigning Authority's mark for this purpose shall consist of not more than four initials to identify the Authority's name, each measuring approximately 115 millimetres in height and 75 millimetres in width.

PART V

CONDITIONS OF ASSIGNMENT

Requirements for the assignment of freeboards

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

(2) Every ship, being—

(a) a ship of Type "A" to which the requirements of Part II of the Fourth Schedule apply; or

(b) a ship of Type "B" to which the requirements of Part III of the Fourth Schedule apply; or

(c) a ship to be assigned with timber freeboards, to which the requirements of Part IV of the Fourth Schedule apply,

shall, in addition to complying with the respective Part of the Fourth Schedule, also comply with the requirements of Part I of the Schedule

except in so far as compliance with Parts II, III and IV, as the case may be, of the Schedule otherwise requires.

(3) Every existing ship, not being a ship to which freeboards are to be assigned in accordance with regulation 36(1) by virtue of regulation 36(2), shall comply with the requirements laid down in the Eighth Schedule. Eighth Schedule

33. (1) Except as otherwise provided in subregulation (2), a ship shall be regarded as not in compliance with the conditions of assignment— Compliance with conditions of assignment

(a) if at any time after the assignment of freeboards to the ship, there has been any alterations to the hull, superstructure, fittings or appliances of the ship to such extent that either—

(i) any requirement applicable to the ship under regulation 32 is not complied with in respect of the ship; or

(ii) the Record of Particulars made in relation to the ship pursuant to regulation 34 is rendered inaccurate in a material respect; or

(b) if the Record of Particulars is not kept on board the ship in accordance with regulation 34(3).

(2) Notwithstanding any alterations to the ship as described in subregulation (1)*(a)*, a ship shall be deemed to be in compliance with the conditions of assignment if either—

(a) new freeboards have been assigned to the ship appropriate to the condition of the ship after the alterations and the ship has been marked with the appropriate load lines and a new certificate has been issued to the owner; or

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

34. (1) A Record of Particulars in the form prescribed in the Third Schedule shall form part of the surveyor's Report such that— Record of Particulars

(a) in the case of a ship to which an International Load Line Certificate is to be issued, the front page of the Record of Particulars shall be in the form of Record 2 of the Third Schedule and the references in parentheses to paragraphs of the Fourth Schedule, where shown above the headings of certain pages of the record, shall be omitted;

(b) in the case of a ship to which a Trinidad and Tobago Load Line Certificate is to be issued the front page of the Record of Particulars shall be in the form of Record 1 of the Third Schedule.

(2) The Record of Particulars shall be completed by the surveyor carrying out the survey of the ship pursuant to regulation 12 and shall be furnished by him to the Assigning Authority in accordance with the provisions of regulation 13 and 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 in regulation 14.

(3) One copy of the Record of Particulars 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.

(4) Where the Assigning Authority is not the Maritime Services Division then the Assigning Authority shall forward to the Director of Maritime Services a copy of the Record of Particulars.

PART VI

FREEBOARDS

Types of freeboards

35. The freeboards which may be assigned to a ship under these Regulations shall be—

(a) Summer freeboard;
(b) Tropical freeboard;
(c) Winter freeboard;
(d) Winter North Atlantic freeboard;
(e) Fresh Water freeboard;
(f) Tropical Fresh Water freeboard;
(g) Summer Timber freeboard;
(h) Winter Timber freeboard;
(i) Winter North Atlantic Timber freeboard;
(j) Tropical Timber freeboard;
(k) Fresh Water Timber freeboard; and
(l) Tropical Fresh Water Timber freeboard.

Determination of freeboards

36. (1) Except otherwise provided in regulation 37—

(a) the freeboards to be assigned to a new ship shall be determined in accordance with the Fifth Schedule; and

Eight Schedule

(b) the freeboards to be assigned to an existing ship shall be determined in accordance with the Eighth Schedule.

(2) Where an existing ship has been so constructed or altered as to comply with the requirements of the Fourth 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 Fifth Schedule, such freeboards may be assigned to the ship.

Minimum freeboard

37. A freeboard determined in accordance with the preceding

regulations of this Part is hereafter referred to in regulations 38 and 39 as a minimum freeboard.

Greater than minimum freeboard

38. Any ship may, on the application of the owner made in that behalf, be assigned a freeboard greater than the minimum freeboard determined in accordance with regulation 36, subject to the following conditions, namely—

(a) on survey of the ship pursuant to regulation 12, the Assigning Authority is satisfied that the ship complies with—

(i) Part V of these Regulations;

(ii) the Fourth Schedule, other than provisions relating to stability;

(iii) Part VII of these Regulations in so far as relates to stability; and

(iv) the Seventh Schedule in so far as relates to stability;

(b) the ship is not assigned with timber freeboards;

(c) where 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) only the load lines appropriate to the greater than minimum freeboard and the fresh water freeboard shall be marked on the sides of the ship;

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

(iii) the vertical line described in regulation 25(2) shall be omitted; and

(iv) subject to subparagraph (iii) the Fresh Water Load Line shall be as described in regulation 25(2) and shall be marked accordingly.

Less than minimum freeboard

39. 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 Minister may, subject to the conditions set out in Part III of the Fifth Schedule, assign such ship a less than minimum freeboard reduced to—

Sixth Schedule

(a) Five-eighths of the appropriate minimum freeboard determined in accordance with Table B of the Sixth Schedule; or

(b) one-half of the appropriate minimum freeboard determined in accordance with paragraph 5(4) or (5) of the Fifth Schedule:

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

Depth of loading

40. Any ship in respect of which a Load Line Certificate has been issued under section 282 of the Act, shall, pursuant to section 303(2) of the Act, post up in some conspicuous place on board ship before the ship leaves any dock, wharf or harbour or other place for the purposes of proceeding to sea, a notice in the form set out in the Ninth Schedule and the notice shall contain the particulars required by that form and be signed by the master and an officer.

Ninth Schedule

Special position of deck-line and correction of freeboards

41. (1) In any case in which the deck-line is to be marked on the sides of a ship as required by regulation 23(3), 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 that regulation.

(2) the location of the point by reference to which the deck-line has been marked as required by regulation 23(3) and the identity of the deck which has been taken as the freeboard deck shall be specified in the Load Line Certificate issued in respect of the ship.

PART VII

Stability, Loading and Ballasting Information

Information as to the stability of ships

42. (1) The owner of any ship to which freeboards are assigned under these Regulations shall provide, for the guidance of the master of the ship, information relating to the stability of the ship in accordance with subregulations (2) to (7).

(2) The information referred to in subregulation (1) shall include particulars appropriate to the ship in respect of all matters specified in the Seventh Schedule and shall be in the form required by that Schedule.

(3) Subject to subregulation (5) the information shall, when first supplied, be based on the determination of stability by means of an inclining test which shall, unless the Minister otherwise permits, be carried out in the presence of a surveyor appointed by the Assigning Authority and, where the Minister so directs, by a surveyor acting on behalf of the Maritime Services Division.

(4) The information first supplied in accordance with subregulation (3) shall be replaced by fresh information whenever its accuracy is materially affected by alterations to the ship and such fresh

information shall, if the Minister so requires, be based on a further inclining test.

(5) The Minister may—

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

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

(6) The Information, and any fresh information to replace the same in accordance with subregulations (3) and (4) shall, before being issued to the master—

(a) be submitted in duplicate by or on behalf of the owner of the ship to the Assigning Authority, and where the Assigning Authority is not the Maritime Services Division an additional copy of the information, or any fresh information, shall be forwarded to the Director of Maritime Services;

(b) be approved by the Maritime Services Division or the Assigning Authority when the Minister so directs.

(7) Information supplied in accordance with subregulations (1) to (6) shall be furnished by the owner of the ship to the master in the form of a book which shall be kept on the ship at all times in the custody of the master.

Information as to loading and ballasting of ships

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

(2) The information referred to in subregulation (1) 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 her structure and shall indicate the maximum stresses permissible for the ship.

(3) Regulation 42(6) shall have effect in respect of information required under this regulation, and the information duly approved in accordance with that subregulation, shall be contained in the book to be

furnished to the master of the ship pursuant to regulation 42(7), so however that the information to be provided pursuant to each regulation is separately shown in the book under separate headings specifying the number and heading of each.

PART VIII

RECOGNITION OF OTHER LOAD LINE CERTIFICATES

Recognition of Certificates issued by other Governments

44. (1) Certificates which are issued as International Load Line Certificates (1966) in respect of Convention ships by Governments other than Trinidad and Tobago shall be recognized for the purposes of the Act where—

(a) the certificate shows by its terms that it was issued in respect of the ship by—

(i) the Government of the Convention country in which the ship is registered or, if the ship is not registered in any such country or elsewhere, the Government of the Convention country whose flag she flies; or

(ii) the Government of any other Convention country stated in the certificate to have issued the certificate at the request of a country specified in subparagraph (i); or

(iii) by a person or organization under the authority of a Government specified in subparagraph (i) or (ii);

(b) the certificate is in the official language or languages of the issuing country and, if the language used is neither English nor French, includes in its text a translation into one of those languages;

(c) the certificate is in the form set out in Annex III to the Load Line Convention for an International Load Line Certificate (1966) and contains all the particulars required by such form;

(d) the certificate shows that it is currently in force and applicable to the voyage in respect of which clearance or transire is required;

(e) the period for which the certificate is expressed to be valid does not exceed five years from the date of issue;

(f) any extension of any period for which the certificate is expressed to be valid is duly endorsed on the certificate by the Issuing Authority and does not exceed five months;

(g) periodical inspections of the ship to which the certificate relates, being inspections required by Article 14(1)*(c)* of the Load Line Convention, are shown duly endorsed on the certificate by the Issuing Authority; and

(h) the ship to which the certificate relates—

(i) where registered in a Convention country when the certificate was issued, remains registered in that country; or

(ii) where not so registered when the certificate was issued, either has since been registered in the Convention country by or on behalf of the Government of which the Certificate was issued and remains so registered, or flies the flag of that Convention country.

(2) Subregulation (1) applies to exemption certificates issued in accordance with the Load Line Convention, in the same manner as it applies to International Load Line Certificates (1966) subject to the substitution for the reference in subregulation (1)*(c)* to an International Load Line Certificate (1966) of reference to an International Load Line Exemption Certificate.

FIRST SCHEDULE

(Regulations 15 and 20)

Forms of Certificates

FORM 1

International Load Line Certificate (1966)

(Official Seal)

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

The Republic of Trinidad and Tobago

by .....

(full official designation of the Assigning Authority)

Name of Ship	Distinctive Number or Letters	Port of Registry	Length (L) as defined in Article 2(8)	Gross Tonnage

*Freeboard assigned as: A new ship, An existing ship.

†Type of Ship: Type A, Type B, Type B with reduced/increased freeboard/timber 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)

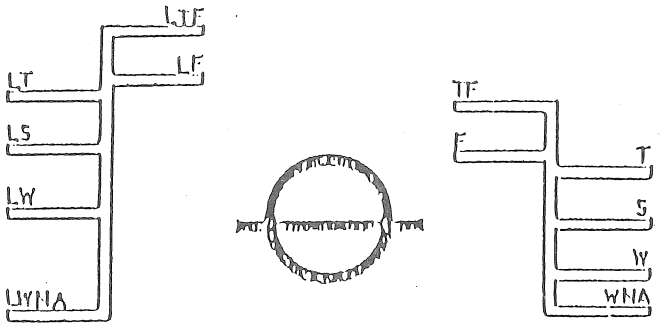
NOTE: Freeboards and Load Lines which are not applicable need not be entered on the certificate.

Allowance for Fresh Water for all freeboards other than timber..... mm.

Allowance for Fresh Water for Timber freeboards..... mm.

The upper edge of the deck-line from which these freeboards are measured is

.....mm.....



Note: Applicable load lines to be indicated.

Date of initial or periodical survey.....

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

This certificate is valid until ..... subject to periodical inspections in accordance with Article 14(1)*(c)* of the Convention.

Issued at ..... on .....19.....

The undersigned declares that

† he is duly authorised

†.....(specify Assigning Authority) are duly authorised by the said Government to issue this Certificate.

.....

(Signature and designation)

NOTE

1. When a ship departs from a port situated on a river or inland water, 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.

* Delete whichever is inapplicable.

† The first alternative is to be used if the Certificate is issued by the Maritime Services Division and the second where it is issued by an Assigning Authority other than the Division. Delete whichever is inapplicable.

This is to certify that at a periodical inspection required by Article 14(1)*(c)* of the Convention, this ship was found to comply with the relevant provisions of the Convention.

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

NOTE

This Certificate must be kept framed and posted up in some conspicuous place on board the ship, so long as it remains in force and the ship is in use.

FORM 2

INTERNATIONAL LOAD LINE EXEMPTION CERTIFICATE

(Official Seal)

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

THE REPUBLIC OF TRINIDAD AND TOBAGO

by the Maritime Services Division

Name of Ship	Distinctive Number or Letters	Port of Registry

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

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

.....

.....

.....

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

From: .....

To: .....

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

.....

.....

.....

.....

.....

.....

This certificate is valid until ..... subject, where appropriate, to periodical inspections in accordance with Article 14(1)*(c)* of the Convention.

Issued at ..... on ..... 19.....
The undersigned declares that he is duly authorised by the said Government to issue this certificate.

.....
Authorised officer of the Maritime Services Division

*Delete whichever is inapplicable.

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

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

..... Surveyor, Maritime Services Division

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

..... Surveyor, Maritime Services Division

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

..... Surveyor, Maritime Services Division

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

..... Surveyor, Maritime Services Division

This ship continues to comply with the conditions under which this exemption was granted, and the validity of this certificate is, in accordance with Article 19(4)*(a)* of the Convention, extended until .....

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

.....

Authorised by the Maritime Services Division

FORM 3

TRINIDAD AND TOBAGO LOAD LINE CERTIFICATE

(Official Seal)

ISSUED * by the Maritime Services Division/* under the authority of the Minister;

* by .....

(full official designation of the Assigning Authority)

Name of Ship	Distinctive Number or Letters	Port of Registry	Length (L) as defined by regulations under section 280 of the Shipping Act, 1987	Gross Tonnage

*Freeboard assigned as: A new ship, An existing ship.

†Type of ship; Type A, Type B, 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)

Allowance for fresh water for all freeboards .....mm.

The upper edge of the deck line from which these freeboards are measured is.....mm .....

This is to certify that this ship has been surveyed and the freeboards and load lines shown above have been assigned in accordance with the Shipping (Load Line) Regulations 1992.

This certificate is valid until ..... subject to periodical inspections in accordance with those Regulations.

Issued at ..... on .....19.....

Signature and designation .....

on behalf of .....
(specify Assigning Authority)

NOTE:

1. When a ship departs from a port situated on a river or inland water, 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.

*Delete whichever is inapplicable.

This is to certify that at a periodical inspection required by the Shipping (Load Line) Regulations 1992 this ship was found to comply with the relevant provisions of the Regulations.

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

Survey of this ship having been satisfactorily completed in accordance with the requirements of the Shipping (Load Line) Regulations 19..... this certificate is extended until.....

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

(Signature and designation) .....

on behalf of ..... (specify Assigning Authority)

NOTE

This Certificate must be kept framed and posted up in some conspicuous place on board the ship, so long as it remains in force and the ship is in use.

FORM 4

TRINIDAD AND TOBAGO LOAD LINE EXEMPTION CERTIFICATE

(Official Seal)

Issued by the Maritime Services Division

Name of Ship	Distinctive Number or Letters	Port of Registry

This is to certify that the above-mentioned ship is exempted pursuant to section 287(2) of the Shipping Act, 1987 from

*All the provisions of that Act and of the Shipping (Load Line) Regulations, 1992.

*The following provisions of that Act and of the Shipping (Load Line) Regulations, 1992.

_____

_____

_____

Subject to the following conditions** :

_____

_____

_____

This certificate is valid until ..... subject where appropriate, to periodical inspections in accordance with the Shipping (Load Line) Regulations.

Issued at ..... on ..... 19.....

.....

An authorised officer of the Maritime Services Division

*Delete if inapplicable.

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

Signed ..... Place..... Date.....
Surveyor, Maritime Services Division

Signed ..... Place..... Date.....
Surveyor, Maritime Services Division

Signed ..... Place..... Date.....

Surveyor, Maritime Services Division

Signed ..... Place..... Date.....
Surveyor, Maritime Services Division

SECOND SCHEDULE

(Regulation 5)

ZONES, AREAS AND SEASONAL PERIODS

A. Northern Winter Seasonal Zones and Areas

1. (1) The North Atlantic Winter Seasonal Zones I and II and the related seasonal periods shall be as set out in sub-paragraphs (2) to (7).

(2) The North Atlantic Winter Seasonal Zone I lies within the meridian of longitude 50° 00' West from the coast of Greenland to latitude 45° 00' North, thence the parallel of latitude 45° 00' North to longitude 15° 00' West, thence the meridian of longitude 15° 00' West to latitude 60° 00' North, thence the parallel of latitude 60° 00' North to the Greenwich Meridian, thence this meridian northwards.

(3) The seasonal periods for the North Atlantic Seasonal Zone I are—

(a) Winter: 16th October to 15th April.

(b) Summer: 16th April to 15th October.

(4) The North Atlantic Winter Seasonal Zone II lies within the meridian of longitude 68° 30' West from the coast of the United States to latitude 40° 00' North thence the rhumb line to the point latitude 36° 00' North longitude 73° 00' West, thence the parallel of latitude 36° 00' North to longitude 25° 00' West and thence the rhumb line to Cape Torinana.

(5) Excluded from the North Atlantic Winter Seasonal Zone II are the North Atlantic Winter Seasonal Zone I, the North Atlantic Winter Seasonal Area and the Baltic Sea bounded by the parallel of latitude of the Skaw in the Skagerrak.

(6) The seasonal periods for the North Atlantic Winter Seasonal Zone II are—

(a) Winter: 1st November to 31st March.

(b) Summer: 1st April to 31st October.

(7) The Shetland Islands are to be considered as being on the boundary line between the North Atlantic Winter Seasonal Zones I and II.

2. (1) The North Atlantic Winter Seasonal Area and the related seasonal periods shall be as set out in subparagraphs (2) and (3).

(2) The boundary of the North Atlantic Winter Seasonal Area is the meridian of longitude 68° 30' West from the coast of the United States to latitude 40° 00' North, thence the rhumb line to the southernmost intersection of the meridian of longitude 61° 00' West with the coast of Canada and thence the East coasts of Canada and the United States.

(3) The seasonal periods for the North Atlantic Winter Seasonal Area are—

(a) for ships over 100 metres in length—

(i) Winter: 16th December to 15th February.

(ii) Summer: 16th February to 15th December.

(b) for ships over 100 metres or less in length—

(i) Winter: 1st November to 31st March.

(ii) Summer: 1st April to 31st October.

3. (1) The North Pacific Winter Seasonal Zone and the related Seasonal Periods shall be as set out in subparagraphs (2) and (3).

(2) The southern boundary of the North Pacific Winter Seasonal Zone is the parallel of latitude 50° 00' North from the east coast of the USSR to the west coast of Sakhalin, thence the west coast of Sakhalin to the southern extremity of Cape Kril'on thence the rhumb line to Wakkanai, Hokkaido, Japan, thence the east and south coasts of Hokkaido to longitude 145° 00' East, thence the meridian of longitude 145° 00' East to latitude 35° 00' North thence the parallel of latitude 35° 00' North to longitude 150° 00' West and thence the rhumb line to the southern extremity of Dall Island, Alaska.

(3) The seasonal periods for the North Pacific Winter Seasonal Zone are—

(a) Winter: 16th October to 15th April.

(b) Summer: 16th April to 15th October.

B. Southern Winter Seasonal Zone

4. (1) The Southern Winter Seasonal Zone and the related Seasonal Periods shall be as set out in subparagraphs (2), (3) and (4).

(2) 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° 00' South, longitude 50° 00' West, thence the parallel of latitude 34° 00' South to longitude 17° 00' East, thence the rhumb line to the point latitude 35° 10' South, longitude 20° 00' East, thence the rhumb line to the point latitude 34° 00' South, longitude 28° 00' East, thence the rhumb line to the point latitude 35° 30' South, longitude 118° 00' East, and thence the rhumb line to Cape Grim on the northwest coast of Tasmania; thence along the north and east coast 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° 00' South, longitude 170° 00' East, thence the rhumb line to the point latitude 33° 00' South, longitude 170° 00' West and thence the parallel of latitude 33° 00' South to the point latitude 33° 00' South, longitude 79° 00' West, thence the rhumb line to the point latitude 41° 00' South, longitude 75° 00' West, thence the rhumb line to Punta Corona lighthouse on Chiloe Island, Latitude 41° 47' South, longitude 73° 53' West, thence along the north, east and south coasts of Chiloe Island to the point latitude 43° 20' South, longitude 74° 20' West, and thence the meridian of longitude 74° 20' West to the parallel of latitude 45° 45' South, including the inner Zone of Chiloe channels from the meridian 74° 20' West to the East.

(3) The seasonal periods for the Southern Winter Seasonal Zone are—

(a) Winter: 16th April to 15th October.

(b) Summer: 16th October to 15th April.

(4) Valparaiso is to be considered as being on the boundary line of the Summer and Winter Seasonal Zones.

C. Tropical Zone

5. (1) The Tropical Zone shall be as set out in subparagraphs (2) to (7).

(2) The northern boundary of the Tropical Zone is the parallel of latitude 13° 00' North from the east coast of the American continent to longitude 60° 00' West, thence the rhumb line to the point latitude 10° 00' North, longitude 58° 00' West, thence the parallel of latitude 10° 00' North to the longitude 20° 00' West, thence the meridian of longitude 20° 00' West to latitude 30° 00' North and thence the parallell of latitude 30° 00' North to the west coast of Africa; from the east coast of Africa the parallel of latitude 8° 00' North to longitude 70° 00' East, thence the meridian of longitude 70° 00' East to latitude 13° 00' North, thence the parallel of latitude 13° 00' North to the west coast of India; thence the south coast of India to latitude 10° 30' North on the east coast of India, thence the rhumb line to the point latitude 9° 00' North, longitude 82° 00' East, thence the meridian of longitude 82° 00' East to latitude 8° 00' North, thence the parallel of latitude 8° 00' North to the west coast of Malaysia, thence the coast of South-East Asia to the east coast of Vietnam at latitude 10° 00' North, thence the parallel of latitude 10° 00' North to longitude 145° 00' East, thence the meridian of longitude 145° 00' East to latitude 13° 00' North and thence the parallel of latitude 13° 00' North to the west coast of the American continent.

(3) 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° 00' West 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° 00' South to the west coast of Madagascar, thence the west and north coasts of Madagascar to longitude 50° 00' East, thence the meridian of longitude 50° 00' East to latitude 10° 00' South, thence the parallel of latitude 10° 00' South to longitude 98° 00' East, 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° 00' South to the west side of Cape York; from the east side of Cape York the parallel of latitude 11° 00' South to longitude 150° 00' West, thence the rhumb line to the point latitude 26° 00' South, longitude 75° 00' West, thence the rhumb line to the point latitude 32° 47' South, longitude 72° 00' West, and thence to the parallel of latitude 32° 47' South to the west coast of South America.

(4) The areas to be included in the Tropical Zone are as follows—

(a) the Suez Canal, the Red Sea and the Gulf of Aden, from Port Said to the meridian of longitude 45° 00' East;

(b) the Persian Gulf to the meridian of longitude 59° 00' East;

(c) the area bounded by the parallel of latitude 22° 00' South from the east coast of Australia to the Great Barrier Reef, thence the Great Barrier Reef to latitude 11° 00' South. The northern boundary of the area is the southern boundary of the Tropical Zone.

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

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

(7) Valparaiso and Santos are to be considered as being on the boundary line of the Tropical and Summer Zones.

D. Seasonal Tropical Areas

6. (1) The Seasonal Tropical Areas and related seasonal periods are as set out in subparagraphs (2) to (22).

(2) The Seasonal Tropical Area in the North Atlantic shall consist of an area bounded—

(a) on the North by the rhumb line from Cape Catoche, Yucatan, to Cape San Antonio, Cuba, the north coast of Cuba to latitude 20° 00' North and thence the parallel of latitude 20° 00' North to longitude 20° 00' West;

(b) on the West by the coast of the American continent;

(c) on the South and East by the nothern boundary of the Tropical Zone.

(3) The Seasonal Periods for the Tropical area in the North Atlantic are—

(a) Tropical: 1st November to 15th July.

(b) Summer: 16th July to 31st October.

(4) The Seasonal Tropical Area in the Arabian Sea shall consist of an area bounded—

(a) on the West by the coast of Africa, the meridian of longitude 45° 00' East in the Gulf of Aden, the coast of South Arabia and the meridian of longitude 59° 00' East in the Gulf of Oman;

(b) on the North and East by the coasts of Pakistan and India;

(c) on the South by the northern boundary of the Tropical Zone.

(5) The Seasonal Periods for the Tropical Area in the Arabian Sea Area are—

(a) Tropical: 1st September to 31st May.

(b) Summer: 1st June to 31st August.

(6) The Seasonal Tropical Area in the Bay of Bengal shall consist of the area of the Bay of Bengal lying northward of the northern boundary of the Tropical Zone.

(7) The Seasonal Periods for the Seasonal Tropical Area in the Bay of Bengal are—

(a) Tropical: 1st December to 30th April.

(b) Summer: 1st May to 30th November.

(8) The Seasonal Tropical Area 1 in the South Indian Ocean shall consist of an area bounded—

(a) on the North and West by the southern boundary of the Tropical Zone and the east coast of Madagascar.

(b) on the South by the parallel of latitude 20° 00' South;

(c) on the East by the rhumb line from the point latitude 20° 00' South, longitude 50° 00' East, to the point latitude 15° 00' South, longitude 51° 30' East, and thence by the meridian of longitude 51° 30' East to latitude 10° 00' South.

(9) The Seasonal Periods for the Seasonal Tropical Area 1 in the South Indian Ocean are—

(a) Tropical: 1st April to 30th November.

(b) Summer: 1st December to 31st March.

(10) The Seasonal Tropical Area 2 in the South Indian Ocean shall consist of an area bounded—

(a) on the North by the southern boundary of the Tropical Zone;

(b) on the East by the coast of Australia;

(c) on the South by the parallel of latitude 15° 00' South from longitude 51° 30' East, to longitude 114° 00' East and thence the meridian of longitude 114° 00' East to the coast of Australia;

(d) on the West by the meridian of longitude 51° 30' East.

(11) The Seasonal Periods for the Seasonal Tropical Area 2 in the South Indian Ocean are—

(a) Tropical: 1st May to 30th November.

(b) Summer: 1st December to 30th April.

(12) The Seasonal Tropical Area in the China Sea shall consist of an area bounded—

(a) on the West and North by the coasts of Vietnam and China from latitude 10° 00' North to Hong Kong;

(b) 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° 00' North;

(c) on the South by the parallel of latitude 10° 00' North.

(13) Hong Kong and Saul are to be considered as being on the boundary of the Seasonal Tropical Area and Summer Zone.

(14) The Seasonal Periods for the Seasonal Tropical Area in the China Sea are—

(a) Tropical: 21st January to 20th April.

(b) Summer: 1st May to 20th January.

(15) The Seasonal Tropical Area 1 in the North Pacific shall consist of an area bounded—

(a) on the North by the parallel of latitude 25° 00' North;

(b) on the West by the meridian of longitude 160° 00' East;

(c) on the South by the parallel of latitude 13° 00' North;

(d) on the East by the meridian of longitude 130° 00' West.

(16) The Seasonal Periods for the Seasonal Tropical Area 1 in the Northern Pacific are—

(a) Tropical: 1st April to 31st October.

(b) Summer: 1st November to 31st March.

(17) The Seasonal Tropical Area 2 in the North Pacific shall consist of an area bounded—

(a) on the North and East by the west coast of the American continent;

(b) on the West by the meridian of longitude 123° 00' West from the coast of the American continent to latitude 33° 00' North and by the rhumb line from the point latitude 33° 00' North, longitude 123° 00' West to the point latitude 13° 00' North, longitude 105° 00' West;

(c) on the South by the parallel of latitude 13° 00' North.

(18) The Seasonal Periods for the Seasonal Tropical Area 2 in the North Pacific are—

(a) Tropical: 1st March to 30th June and 1st November to 30th November.

(b) Summer: 1st July to 31st October and 1st December to 28th, 29th February.

(19) The Seasonal Tropical Area 1 in the South Pacific shall consist of the Gulf of Carpentaria south of latitude 11° 00' South.

(20) The Seasonal Periods for the Seasonal Tropical Area 1 in the South Pacific are—

(a) Tropical: 1st April to 30th November.

(b) Summer: 1st December to 31st March.

(21) The Seasonal Tropical Area 2 in the South Pacific shall consist of an area bounded—

(a) on the North and East by the southern boundary of the Tropical Zone;

(b) on the South by the Tropic of Capricorn from the east coast of Australia to longitude 150° 00' West, thence by the meridian of longitude 150° 00' West to latitude 20° 00' South and thence by the parallel of latitude 20° 00' South to the point where it intersects the southern boundary of the Tropical Zone.

(c) 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.

(22) The Seasonal Periods for the Seasonal Tropical Area 2 in the South Pacific are—

(a) Tropical: 1st April to 30th November.

(b) Summer: 1st December to 31st March.

E. Summer Zones

7. (1) The Summer Zones and related Seasonal Periods are as set out in subparagraphs (2) to (4).

(2) Subject to subparagraphs (3) and (4), the sea areas lying outside the Areas defined in paragraphs 1 to 7 inclusive shall constitute the Summer Zones.

(3) For ships of 100 metres or less in length, the area bounded—

(a) on the North and West by the east coast of the United States;

(b) on the East by the meridian of longitude 68° 30' West from the coast of the United States to latitude 40° 00' North and thence by the rhumb line to the point latitude 36° 00' North longitude 73° 00' West;

(c) on the South by the parallel of latitude 36° 00' North;

is a Winter Seasonal Area.

(4) The Seasonal Periods for the Winter Seasonal Area defined in subparagraph (3) are—

(a) Winter: 1st November to 31st March.

(b) Summer: 1st April to 31st October.

F. Enclosed Seas

8. (1) The Enclosed Seas and related Seasonal Periods are to be dealt with as set out in subparagraphs (2) to (9).

(2) The area of the Baltic 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 or less in length, it is a Winter Seasonal Area.

(3) The Seasonal Periods for the Winter Seasonal Area defined in subparagraph (2) are—

(a) Winter: 1st November to 31st March.

(b) Summer: 1st April to 31st October.

(4) The Black Sea is included in the Summer Zones; however, for ships of 100 metres or less in length, the area north of latitude 44° 00' North is a Winter Seasonal Area.

(5) The Seasonal Periods for the Winter Seasonal Area defined in subparagraph (4) are—

(a) Winter: 1st December to 28th, 29th February.

(b) Summer: 1st March to 30th November.

(6) The Mediterranean Sea is included in the Summer Zones; however, for ships of 100 metres or less in length, the area bounded—

(a) on the North and West by the coasts of France and Spain and the meridian of longitude 3° 00' East from the coast of Spain to latitude 40° 00' North;

(b) on the South by the parallel of latitude 40° 00' North from longitude 3° 00' East to the west coast of Sardinia;

(c) on the East by the West and North coasts of Sardinia from latitude 40° 00' North to longitude 9° 00' East, thence by the meridian of longitude 9° 00' East to the south coast of Corsica, thence by the west and north coasts of Corsica to longitude 9° 00' East and thence by the rhumb line to Cape Sicié;

is a Winter Seasonal Area.

(7) The Seasonal Periods for the Winter Seasonal Area defined in subparagraph (6) are—

(a) Winter: 16th December to 15th March.

(b) Summer: 16th March to 15th December.

(8) The Sea of Japan south of latitude 50° 00' North is included in the Summer Zones; however, for ships of 100 metres or less in length, the area between the parallel of latitude 50° 00' North and the rhumb line from the east coast of Korea at latitude 38° 00' North to the west coast of Hokkaido, Japan, at latitude 43° 12' North is a Winter Seasonal Area.

(9) The Seasonal Periods for the Winter Seasonal Area defined in subparagraph (8) are—

(a) Winter: 1st December to 28th, 29th February.

(b) Summer: 1st March to 30th November.

G. Ports on Boundary Lines

9. For the purposes of the application of this Schedule to a ship at a port which stands on the boundary line between two Zones or Areas or between a Zone and an Area, or which is required under this Schedule to be considered as being on such a boundary line, the port shall be deemed to be within the Zone or Area into which the ship is about to proceed or from which she has arrived as the case may be.

THIRD SCHEDULE

(Regulation 34)

Record of Particulars

The following is the form of record of particulars referred to in regulation 34—

Record 1

SHIPPING (LOAD LINE) REGULATIONS, 1992
RECORD OF PARTICULARS RELATING TO CONDITIONS OF ASSIGNMENT

In this record references to regulations are references to the regulations set out in Annex I to the International Convention on Load Lines, 1966, and references to paragraphs are references to paragraphs of the Fourth Schedule (Conditions of Assignment) to the Shipping (Load Line) Regulations, 1992.

Name of Ship .....

Port of registry .....

Nationality .....

Distinctive number or letters .....

Shipbuilders .....

Yard number .....

Date of build/conversion .....

Freeboards assigned as a ship of Type .....

Classification .....

Date and place of initial survey .....

RECORD 2

INTERNATIONAL CONVENTION ON LOAD LINES, 1966

RECORD OF PARTICULARS RELATING TO CONDITIONS OF ASSIGNMENT

In this record references to regulations are references to the regulations set out in Annex I to the International Convention on Load Lines, 1966.

Name of Ship .....

Port of registry .....

Nationality .....

Distinctive number or letters .....

Shipbuilders .....

Yard number .....

Date of build/conversion .....

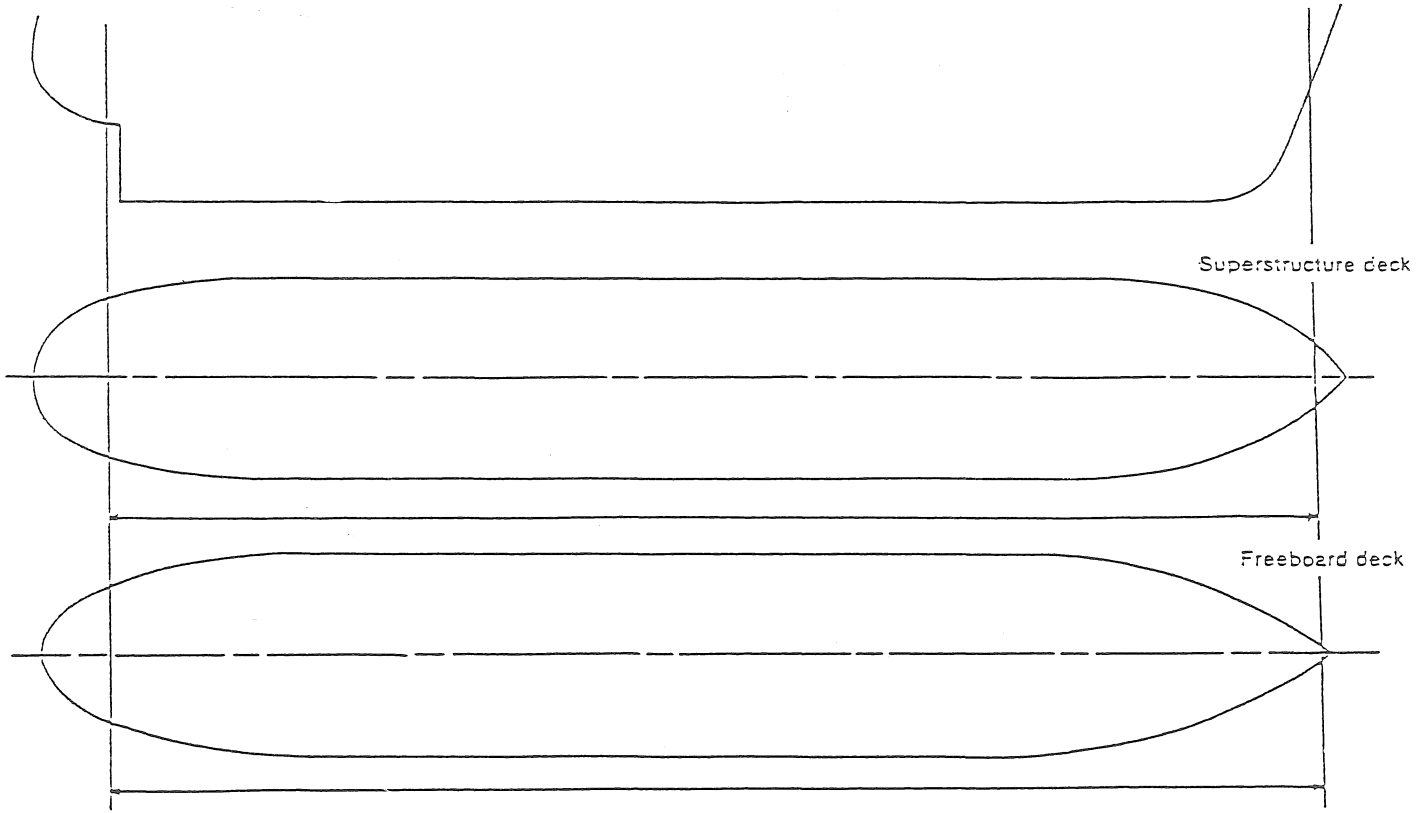
Freeboards assigned as a ship of Type .....

Classification .....

Date and place of initial survey .....

A PLAN OF SUITABLE SIZE MAY BE ATTACHED TO THIS REPORT IN PREFERENCE TO THE SKETCHES ON THIS PAGE

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



(FOURTH SCHEDULE PARAGRAPHS 7 AND 8)

DOORWAYS IN SUPERSTRUCTURES, EXPOSED MACHINERY CASINGS AND DECKHOUSES PROTECTING OPENINGS IN FREEBOARD AND SUPERSTRUCTURE DECKS
(REG. 12, 17 AND 18)

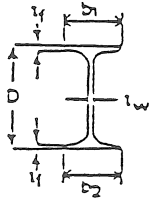
Location	Ref. No. on Sketch of plan	Number and size of openings	Height of sills	Closing appliances	
				Type and material	Number of clips
In forecastle bulkhead					
In bridge forward bulkhead					
In bridge after bulkhead					
In raised quarter deck bulkhead					
In poop bulkhead					
In exposed machinery casings on freeboard or raised quarter decks					

DOORWAYS IN SUPERSTRUCTURES, EXPOSED MACHINERY CASINGS AND DECKHOUSES PROTECTING OPENINGS IN FREEBOARD AND SUPERSTRUCTURE DECKS—*Continued*

Location	Ref. No. on Sketch of plan	Number and size of openings	Height of sills	Closing appliances	
				Type and material	Number of clips
In exposed casings on superstructure decks					
In machinery casings within superstructures or deckhouses on freeboard deck					
In deckhouses in Position 1 enclosing openings leading below free board deck					
In deckhouses in Position 2 enclosing openings leading within enclosed superstructures or below freeboard deck					
In exposed pump room casings					

(FOURTH SCHEDULE PARAGRAPH 5)

HATCHWAYS AT POSITIONS 1 AND 2 CLOSED BY PORTABLE COVERS AND SECURED WEATHERTIGHT BY TARPAULINS AND BATTENING DEVICES (REG. 15)

Position and Reference No. on sketch or plan							
Dimensions of clear opening at top of coaming							
Height of coaming above deck							
PORTABLE BEAMS	Number						
	Spacing						
	$b_1 \times t_f$						
	$D \times t_w$						
	$b_2 \times t_f$						
	Bearing surface						
	Means of securing each beam						
PORTABLE COVERS	Material						
	Thickness						
	Direction fitted						
	Bearing surface						
	Spacing of cleats						
TARPAULINS	Number of layers						
	Materials						

Means of securing each section of cover.

Are wood covers fitted with galvanised end bands?

(FOURTH SCHEDULE PARAGRAPHS 6 AND 19)

HATCHWAYS AT POSITIONS 1 AND 2 CLOSED BY WEATHERTIGHT COVERS OF STEEL (OR OTHER EQUIVALENT MATERIAL) FITTED WITH GASKETS AND CLAMPING DEVICES (REG. 16)

Position and Reference No. on sketch or plan						
Dimensions of clear opening at top of coaming						
Height of coaming 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 coaming above deck						
Type of cover or Patent Name						
Material						

(FOURTH SCHEDULE PARAGRAPHS 7 AND 8)

MACHINERY SPACE OPENINGS AND MISCELLANEOUS OPENINGS IN FREEBOARD AND SUPERSTRUCTURE DECKS (REGS. 17 AND 18)

Position and Reference No. on sketch or plan						
Dimensions						
Height of coaming						
COVER — Material						
COVER — How attached						
Number and spacings of toggies						

Position and Reference No. on sketch or plan						
Dimensions						
Height of coaming						
COVER — Material						
COVER — How attached						
Number and spacings of toggies						

Particulars of spurting pipe closing arrangements:

(FOURTH SCHEDULE PARAGRAPH 9)

VENTILATORS ON FREEBOARD AND SUPERSTRUCTURE DECKS (POSITIONS 1 AND 2) (REG. 19)

Deck on which fitted	Number fitted	Coaming		Type (State Patent Name if any)	Closing appliances
		Dimensions	Height		

(FOURTH SCHEDULE PARAGRAPH 10)

AIR PIPES ON FREEBOARD AND SUPERSTRUCTURE DECK (REG. 20)

Deck on which fitted	Number fitted	Coaming		Type (State Patent Name if any)	Closing appliances
		Dimensions	Height		

(FOURTH SCHEDULE PARAGRAPH 11)

CARGO PORTS AND OTHER SIMILAR OPENINGS (REG. 21)

Position of port	Dimensions of opening	Distance of lower edge from freeboard deck	Securing devices	Remarks

(FOURTH SCHEDULE PARAGRAPH 12)

SCUPPERS' INLET AND DISCHARGES (REG. 22)

State if scupper or discharge	Number	Pipe			From	Vertical distance above top of keel			Number, Type ‡ and Material † of Discharge valves	Position of con
		Diameter	Thick-ness	† Material		Discharge		Uppermost valve		
						Outlet in hull	Inboard end			

In Ro-Ro ships, indicate how ready accessibility to scupper valves is ensured when vehicle space is filled:

S–Scupper
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
SDANR–Screw down automatic non-return

(FOURTH SCHEDULE PARAGRAPH 13)

SIDE SCUTTLES (REG. 23)

Position	Number fitted	Clear glass size	Fixed or opening	Material		Type of glass and thickness	Standards used and Type No.
				Frame	Deadlight		

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

(FOURTH SCHEDULE PARAGRAPHS 14 AND 20)

FREEING PORTS (REG. 24)

	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					
Freeboard deck — Forward well					
Superstructure deck					

State fore and aft position of each freeing port in relation to superstructure end bulkheads

After well

Forward well

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

Heights of lower edge of freeing port above deck

(FOURTH SCHEDULE PARAGRAPHS 15, 18, 22, 23 AND 24)

PROTECTION OF THE CREW (REGS. 25 AND 26)

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

State details of lifelines, walkways, gangways or underdeck passageways where required to be fitted:

(FOURTH SCHEDULE PARAGRAPH (REG. 29)

TIMBER DECK CARGO FITTINGS (REG. 44)

State particulars of uprights, sockets, lashings, guardrails and lifelines:

OTHER SPECIAL FEATURES

INITIAL SURVEY

The conditions of assignment shown on this form are a record of the arrangements and fittings provided on the ship and are in accordance with the requirements of the relevant regulations set out in Annex 1 to the International Convention on Load Lines, 1996 and of these Regulations.

.....
Surveyor's Signature

.....
Date

SUBSEQUENT PERIODICAL SURVEYS

I have completed the periodical survey and am satisfied that the fittings and appliances are in accordance with the particulars shown in this record and are in good condition and that approved stability information and, where applicable, information relating to loading and ballasting of the ship is on board.

Signature	Port of Survey	Date of Survey
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

FOURTH SCHEDULE

(Regulation 32)

CONDITIONS OF ASSIGNMENT

Interpretation

1. In this Schedule—

"after perpendicular" means the perpendicular taken at the after end of the ship's length (L);

"breadth" and the symbol (B) in relation to a ship means the maximum breadth of the ship measured amid ships to the moulded line of the frame in the case of a ship having a metal shell, or to the outer surface of the hull in the case of a ship having a shell of any other material;

"enclosed superstructure" means a superstructure—

(a) which has enclosing bulkheads of efficient construction in which all access openings are fitted with sills and weathertight doors; and

(b) in which all other openings in the sides or ends thereof are fitted with efficient weathertight means of closing, but shall not include a bridge or 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;

"exposed position" means a position which is either—

(a) exposed to weather and sea; or

(b) within a structure so exposed other than an enclosed superstructure;

"forward perpendicular" means the perpendicular taken at the forward end of the ship's length (L), coinciding with the fore-side of the stem on the waterline on which such length is measured;

"height" in relation to a superstructure means the least vertical height measured at the side from the top of the superstructure deck beams to the top of the freeboard deck beams;

"standard height" of a superstructure means the height ascertained in accordance with paragraph 9 of the Fifth Schedule;

"summer load waterline" in relation to a ship means the waterline which corresponds or will, when load lines have been marked on the sides of the ship, correspond to the summer load line of the ship;

"superstructure" means a decked structure, including a raised quarter deck situated on the freeboard deck which either stands from side to side of the ship or is such that its side plating is not inboard of the shell plating of the ship by more than four per cent of the breadth (B) of the ship; and, where the freeboard deck of the ship consists of a lower deck as described in item *(b)* of the definition of "freeboard deck" in regulation 2 includes that part of the hull of the ship which extends above the freeboard deck;

"superstructure deck" means a deck forming the top of a superstructure;

"Type 'A' Ship" means a ship which is designed to carry only liquid cargoes in bulk and has the characteristics set out as follows—

(a) the cargo tanks of the ship have only small access openings closed by watertight gasketed covers of steel;

(b) the ship in consequence of its design has high integrity of the exposed deck and has a high degree of safety against flooding in consequence of the low permeability of loaded cargo spaces and the degree of subdivision therein;

(c) if over 150 metres in length and designed to have empty compartments when loaded to the Summer load waterline, the ship shall be capable of remaining afloat after the flooding of any one of such empty compartments, at an assumed permeability of 0.95, in the condition of equilibrium described in item *(d)* save that if the ship exceeds 225 metres in length its machinery space shall also be treated as one of the floodable compartments above mentioned but with an assumed permeability of 0.85;

(d) the condition of equilibrium referred to in item *(c)* is as follows:

(i) the final water line after the flooding specified in item *(c)* is below the top of any ventilator coaming, the lower edge of any pipe opening, the upper edge of the sill and any access opening fitted with a weather tight door, and the lower edge of any other opening through which progressive flooding may take place;

(ii) the angle of heel due to unsymmetrical flooding does not exceed 15 degrees;

(iii) the metacentric height calculated using the constant displacement method has a positive value of at least 50 millimetres in the upright condition after the flooding specified in item *(c)*; and

(iv) the ship has adequate residual stability;

"Type 'B' Ship" means either—

(a) a new ship other than a Type "A" ship; or

(b) an existing ship which, being so constructed or modified as to comply with all the requirements of this Schedule applicable to a new ship of her type is to be assigned freeboards determined in accordance with the Fifth Schedule;

"weathertight" in relation to any part of a ship other than a door in a bulkhead means that the part is such that water will not penetrate it and so enter the hull of the ship in the worst sea and weather conditions likely to be encountered by the ship in service; and in relation to a door in a bulkhead means a door which—

(a) is constructed of steel or other equivalent material, is permanently and strongly attached to the bulkhead and is framed, stiffened and fitted so that the whole structure in which it is set is of equivalent strength to the unpierced bulkhead;

(b) is closed by means of gaskets, clamping devices or other equivalent means permanently attached to the bulkhead or to the door itself;

(c) when closed, is weathertight as above defined; and

(d) is so arranged that it can be operated from either side of the bulkhead.

Reference to any structure, opening or fitting as being in Position 1 and Position 2 shall be construed as references to its being in the following positions respectively—

Position 1:

(a) on an exposed freeboard deck;

(b) on a raised quarter deck; or

(c) on an exposed superstructure deck situated forward of a point located one quarter of the ship's length (L) from the forward perpendicular;

Position 2:

on an exposed superstructure deck situated abaft one quarter of the ship's length (L) from the forward perpendicular.

PART I

SHIPS IN GENERAL

Structural strength and stability

2. (1) The construction of the ship shall be such that her general structural strength will be sufficient for the freeboards to be assigned to her.

(2) The design and 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, and for this purpose regard shall be had, in addition to the intended service of the ship and to any relevant requirements or Regulations made under the Shipping Act, to the stability and methods of the calculation of the criteria laid down in the Seventh Schedule.

(3) To determine whether the ship complies with the requirements of subparagraph (2), the ship shall, unless the Minister otherwise permits, be subjected to an inclining test.

(4) Where an inclining test is conducted in accordance with subparagraph (3) such test shall be witnessed by a Surveyor appointed by the Assigning Authority and where, the Minister so directs, by a Surveyor acting on behalf of the Maritime Services Division.

Superstructure end bulkheads

3. Bulkheads at exposed ends of enclosed superstructures shall be of efficient construction and the height of any sill in an access opening in such a bulkhead shall, except where otherwise stated, be at least 380 millimetres above the deck.

Hatchways: General

4. (1) The provisions of this paragraph and of paragraphs 5 and 6 apply to all hatchways in Position 1 or in Position 2 except where otherwise stated.

(2) Subject to subparagraph (3), the construction and the means for securing the weathertightness of a hatchway shall—

(a) in the case of a hatchway closed by a portable cover and secured weathertight by tarpaulins and battening devices, comply with the requirements of paragraph 5; and

(b) in the case of a hatchway closed by a weathertight cover of steel or other equivalent material fitted with gaskets and clamping devices, comply with the requirements of paragraph 6.

(3) Every hatchway in an exposed position on a deck above a superstructure deck and leading to a space below that 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.

5. (1) Coamings:

Hatchways closed by portable covers and secured weathertight by tarpaulins and battening devices

Every hatchway shall have a coaming of substantial construction. The coaming shall be constructed of mild steel but may be constructed of other material where the strength and stiffness of the coaming are equivalent to those of a coaming of mild steel. The height of the coaming above the deck shall be at least—

(*a*) 600 millimetres if the hatchway is in Position 1;

(*b*) 450 millimetres if the hatchway is in Position 2.

(2) Covers:

(*a*) The width of every bearing surface for a hatchway cover shall be at least 65 millimetres;

(*b*) in the case of a cover made of wood—

(i) the finished thickness of the cover shall be at least 60 millimetres in association with a span of not more than 1.5 metres, and the thickness of covers for larger spans shall be increased in the ratio of 60 millimetres to a span of 1.5 metres;

(ii) the ends of the cover shall be protected by galvanised steel bands efficiently secured;

(*c*) In the case of a cover made of mild steel—

(i) the strength of the cover shall be calculated with an assumed load ascertained in accordance with the following table and the product of the maximum stress thus calculated and the factor 4.25 shall not exceed the minimum ultimate strength of the material;

(ii) the cover shall be so designed as to limit the deflection to not more than 0.0028 times the span under the load appropriate to the hatchway cover under sub item (i);

TABLE

	Assumed Load, per square metre	
Ship's Length (L)	Hatchway in Position 1	Hatchway in Position 2
24 metres	1 metric ton	.75 metric tons
100 metres and over	1.75 metric tons	1.30 metric tons
over 24 metres but less than 100 metres	to be ascertained by linear interpolation	

(d) in the case of a cover made neither of mild steel nor wood the strength and stiffness of the cover shall be equivalent to those of a cover of mild steel.

(3) Portable beams shall be as follows:

(a) where portable beams for supporting hatchway covers are made of mild steel, the strength of such beams shall be calculated with the appropriate assumed load ascertained in accordance with the Table in subparagraph (2) and the product of the maximum stress thus calculated and the factor 5 shall not exceed the minimum ultimate strength of the material;

(b) such beams shall be so designed as to limit the deflection to not more than 0.0022 times the span under the load appropriate to the beam under item *(a)*;

(c) in the case of portable beams not made of mild steel, the strength and stiffness of the beams shall be equivalent to those of beams of mild steel.

(4) Pontoon covers shall be as follows:

(a) where pontoon covers of mild steel are used in place of portable beams and covers, their strength shall be calculated with the appropriate assumed load ascertained in accordance with the Table in subparagraph (2) and the product of the maximum stress thus calculated and the factor 5 shall not exceed the minimum ultimate strength of the material;

(b) such pontoon covers shall be so designed as to limit the deflection to not more than 0.0022 times the span under the load appropriate to a pontoon cover under item *(a)*;

(c) mild steel plating forming the tops of such covers shall be not less in thickness than 1 per cent of the spacing of the stiffness or 6 millimetres, whichever is the greater;

(d) in the case of pontoon covers not made of mild steel, the strength and stiffness of the cover shall be equivalent to those of a cover of mild steel.

(5) Carriers or sockets:

Carriers or sockets for portable beams shall be of substantial construction and shall provide efficient means for the fitting and securing of the beams; where rolling types of beams are used the arrangement 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 millimetres wide and spaced not more than 600 millimetres centre to centre; the end cleats along each side or end of the hatchway shall be not more than 150 millimetres from the hatch corners.

(7) Battens and Wedges:

Battens and wedges shall be efficient for their purpose and in good condition wedges shall be of tough wood or equivalent material cut to 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 tarpaulins shall be provided for every hatchway; such tarpaulins shall be waterproof, in good condition, and of materials of satisfactory strength and quality.

(9) Security of hatchway covers shall be as follows:

(a) except as otherwise provided in item *(b)*, steel bars shall be provided for every hatchway sufficient to ensure that each section of hatchway covers can be sufficiently and independently secured after the tarpaulins have been battened down and that hatchway covers more than 1.5 metres in length are so secured by at least two such bars;

(b) bars of materials other than steel, or means of securing hatchway covers otherwise than by bars, may be so used, where—

(i) in the case of the former, the strength and stiffness of the bars used are equivalent to those of steel bars;

(ii) in either case the degree of security so achieved is not less than that which would be achieved by the use of steel bars.

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

6. (1) Coaming shall be as follows:

(a) except as otherwise provided in item *(b)*, every hatchway shall have a coaming of substantial construction the height of which above the deck shall be at least—

(i) 600 millimetres if the hatchway is in Position 1;

(ii) 450 millimetres if the hatchway is in Position 2;

(b) a hatchway may have a coaming of less than the height applicable under the provisions of item *(a)*, or in exceptional circumstances a coaming may be dispensed with, where—

(i) the safety of the ship will not be impaired in consequence in the worst sea and weather conditions likely to be encountered by the ship in service; and

(ii) any coaming fitted pursuant to this subparagraph is of substantial construction.

(2) Weathertight Covers shall be as follows:

(a) the strength of every cover of mild steel shall be calculated with an assumed load ascertained in accordance with the Table set out in paragraph 5(2) and the product of the maximum stress thus calculated and the factor 4.25 shall not exceed the minimum ultimate strength of the material. Every such cover shall be so designed as to limit the deflection under such a load to not more than 0.0028 times the span;

(b) every cover constructed of material other than mild steel shall have strength and stiffness equivalent to those required in the case of a cover of mild steel;

(c) every cover shall be fitted with efficient means by which it can be secured and made weathertight;

(d) mild steel plating forming the top of any cover shall be not less in thickness than one per cent of the spacing of the stiffeners or 6 millimetres whichever is the greater.

Machinery space openings

7. (1) Every machinery space opening situated in Position 1 or Position 2 shall be efficiently framed and enclosed by a steel casing of substantial strength, account being taken of the extent, if any, to which the casing is protected by other structures.

(2) Every doorway in a casing referred to in subparagraph (1) shall be fitted with a steel weathertight door having a sill the height of which shall be at least—

(a) 600 millimetres above the deck if the opening is in Position 1;

(b) 380 millimetres above the deck if the opening is in Position 2.

(3) Every opening in such a casing, other than a doorway, shall be fitted with a permanently attached cover of steel which is fitted with efficient means by which it can be secured and maintained weathertight and, except in the case of a cover consisting of a plate secured by bolts, is capable of being operated from either side of the opening.

(4) Every fiddley, funnel or machinery space ventilator situated in an exposed position on the freeboard deck or on a superstructure deck shall have a coaming of such height above the deck as will provide adequate protection having regard to its position.

Miscellaneous openings in freeboard and superstructure decks

8. (1) Every manhole and flush scuttle in Position 1 or Position 2 shall be provided with a substantial cover fitted with efficient means by which it can be secured and maintained watertight and unless secured by closely spaced bolts, every such cover shall be permanently attached by a chain or equivalent means so as to be available for immediate use at all times.

(2) Every opening in a deck other than a hatchway, machinery space opening, manhole or flush scuttle shall—

(a) if situated in the freeboard deck be protected either by an enclosed superstructure or by a deckhouse or companionway equivalent in strength and weather tightness to an enclosed superstructure;

(b) if situated in an exposed position either—

(i) in a deck over an enclosed superstructure and giving access to space within that superstructure; or

(ii) on top of a deck house on the freeboard deck and giving access to space below that deck, be protected by an efficient deckhouse or companionway fitted with weathertight doors;

(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, be protected either in accordance with the requirements of item *(b)* or to such lesser extent as may be adequate having regard to its position.

(3) Every door in a companionway, deckhouse or enclosed superstructure referred to in subparagraph (2)*(a)* or *(b)* shall have a sill the height of which shall be at least—

(a) 600 millimetres if the structure is in Position 1;

(b) 380 millimetres if the structure is in Position 2.

Ventilators

9. (1) Except as otherwise provided in subparagraph (2) every ventilator in Position 1 or Position 2 leading to a space below the freeboard deck or below the deck of an enclosed superstructure shall have a coaming of steel or equivalent material, substantially constructed and efficiently connected to the deck and the height of such coamings shall be at least—

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

(b) 760 millimetres above the deck if the ventilator is in Position 2.

(2) Where the coaming for any ventilator referred to in subparagraph (1) is situated in a position in which it will be particularly subjected to weather and sea the height of the coaming shall exceed the relevant minimum height above specified by such amount as is necessary to provide adequate protection having regard to its position.

(3) Where the coaming of any ventilator referred to in subparagraphs (1) and (2) exceeds 900 millimetres in height above the deck it shall be efficiently supported by stays, brackets or other means.

(4) Every ventilator in Position 1 or Position 2 which passes through a superstructure other than an enclosed superstructure shall have a coaming of steel or equivalent material at the freeboard deck, substantially constructed and efficiently connected to that deck and at least 900 millimetres in height above that deck.

(5) Subject to subparagraphs (6) and (7), every ventilator opening in Position 1 or Position 2 shall be provided with an efficient appliance by which it can be closed and secured weathertight and 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 to, the ventilator for which it is provided.

(6) 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 either—

(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.

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

Air pipes

10. (1) The exposed parts of any air pipe leading to a ballast or other tank and extending above the freeboard deck or a superstructure deck shall be of substantial construction.

(2) The exposed opening of any such air pipe shall be fitted with efficient means of closing the opening weathertight, which shall be permanently attached in a position ready for immediate use.

(3) Subject to subparagraph (4), the height above deck of the exposed opening of any such airpipe shall be—

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

(b) if that deck is a superstructure deck, at least 450 millimetres or, if the superstructure is of less than standard height, such greater height as is necessary to provide adequate protection having regard to the lower height of the superstructure.

(4) The height described in subparagraph (3) may in any particular case be lower than the minimum specified in relation thereto in that subparagraph if—

(a) the working of the ship would be unreasonably interfered with if such minimum heights were adhered to; and

(b) the closing arrangements are such as to ensure that such lower height is adequate in the circumstances.

Cargo ports and similar openings

11. (1) Cargo ports and similar openings in the ship's side below the freeboard deck or in the sides or ends of superstructures which form part of the shell of the ship shall be compatible with the design of the ship and shall not exceed in number those necessary for the proper working of the ship.

(2) Every such cargo port and opening shall be provided with a door or doors so fitted and designed as to ensure watertightness and structural integrity commensurate with the surrounding shell plating.

(3) No such cargo port or opening below the freeboard deck shall, unless the Minister otherwise consents, be so situated that when load lines have been marked on the ship's side the lower edge of the port or opening will be below a line drawn parallel to the freeboard deck at side having as its lowest point the upper edge of the uppermost load line.

Scuppers, inlets and discharges

12. (1) Every discharge led through the shell of a ship either—

(a) from spaces below the freeboard deck; or

(b) from within any enclosed superstructure or from within any deckhouse on the freeboard deck which is fitted with weathertight doors, shall be fitted in accordance with subparagraphs (2), (3) and (4) with efficient means for preventing water from passing inboard.

(2) Subject to subparagraphs (3) and (4) the means referred to in subparagraph (1) shall consist of a single automatic non-return valve fitted at the shell of the ship and having positive means of closure from a position or positions above the freeboard deck, and such position or positions shall be readily accessible at all times under service conditions and shall be provided with an indicator showing whether the valve is open or closed.

(3) When load lines are marked on the ship, the inboard end of a discharge pipe is situated more than 0.01 (L) vertically above the Summer load waterline, then that discharge pipe's means of closing may consist of two automatic non-return valves having no positive means of closure, one of which shall be situated as close to the ship's shell as practicable and shall be substantially connected thereto and the inboard one of which is so situated that it shall at all times under service conditions be readily accessible for examination.

(4) Where the vertical distance referred to in subparagraph (3) exceeds 0.02 (L) the discharge pipe's means of closing may consist of a single automatic non-return valve having no positive means of closure, situated as close to the ship's shell as practicable and substantially connected thereto where, taking into account all the relevant circumstances, the arrangement provides adequate protection.

(5) The controls of any valve situated in a manned machinery space, and serving a main or auxiliary sea inlet or discharge or bilge injection system shall be so sited as to be readily accessible at all times under service conditions and valves referred to in this subparagraph and subparagraph (6) shall be equipped with an indicator showing whether the valve is open or closed.

(6) The controls of any valve situated in an unattended machinery space and serving a sea inlet or discharge or 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 and 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 positions of any entry of water into the machinery space other than water resulting from the normal operation of the machinery.

(7) In this paragraph "unattended machinery space" means a machinery space which, during the 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.

(8) Every scupper and discharge pipe originating at any level and penetrating the shell of the ship either—

(a) more than 450 millimetres below the freeboard deck; or

(b) less than 600 millimetres above the Summer load waterline, shall be equipped with an automatic non-return valve situated as close to the ship's shell as practicable and substantially connected thereto.

(9) Subparagraph (8) shall not apply—

(a) where the scupper or discharge pipe is fitted with means for preventing water from passing inboard in accordance with subparagraphs (1) to (4); or

(b) in any case in which the piping of the scupper or discharge pipe is of substantial thickness.

(10) Every scupper leading from a superstructure other than an enclosed superstructure or from a deckhouse not fitted with weathertight doors shall be led overboard.

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

Side scuttles

13. (1) Every side scuttle to space below the freeboard deck or to space within an enclosed superstructure shall be fitted with a hinged inside deadlight by which it can be effectively closed and secured watertight.

(2) No side scuttle shall be fitted in a position such that its sill, when load lines have been marked on the ship's side, will be below a line drawn parallel to the freeboard deck at side having as its lowest point—

(a) 2.5 per cent of the breadth of the ship (B) above the Summer load line; or

(b) 500 millimetres above the Summer load line; whichever is the greater.

(3) Every side scuttle, deadlight, and glass, if fitted shall be of substantial construction and shall be efficiently fitted.

Freeing ports and arrangements

14. (1) Where bulwarks on the weather portions of the freeboard deck, on a raised quarter deck or on a superstructure deck form wells, efficient provision shall be made for rapidly freeing the decks of water in bulk and for draining them.

(2) Except as otherwise provided in subparagraphs (4) and (5), the sum of the areas of the openings of freeing ports on each side of the ship for each well, hereafter referred to in this paragraph as "the freeing port area" and by the symbol "(A)" shall—

(a) if the well is on the freeboard deck or on a raised quarter deck, be not less than the area ascertained in accordance with the formula and provisions given in subparagraph (3); and

(b) if the well is on a superstructure deck other than a raised quarter deck be not less than one half of that area.

(3) The formula referred to in subparagraph (2)*(a)* is—

(a) where the length (1) of a bulwark forming a well is 20 metres or less—(A) = 0.7 + 0.035 (1) square metres;

(b) where the length (1) of a bulwark forming a well exceeds 20 metres;

(c) (A) = 0.07 (1) square metres; in no case need (1) be taken as being greater than 0.7 (1);

(d) where the bulwark is more than 1.2 metres in average height the required area shall be increased by 0.004 square metres per metre of length of well for each 0.1 metre difference in height;

(e) where the bulwark is less than 0.9 metre in average height, the required area may be decreased by 0.004 square metre per metre of length of well for each 0.1 metre difference in height.

(4) With regard to sheer—

(a) where the deck on which the well is situated has no sheer, the area (A) shall be the area ascertained in accordance with subparagraph (2) increased by 50 per cent;

(b) where the deck on which the well is situated has sheer less than standard sheer, the area (A) shall be the area ascertained in accordance with subparagraph (2) increased by a percentage to be obtained by linear interpolation;

(c) where the deck on which the well is situated has sheer, two thirds of the freeing port area (A) shall be situated in the half of the well which is nearest to the lowest point of the sheer.

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

Breadth of Hatchway or Trunk in Relation to the Breadth of Ship	Area of Freeing Ports in Relation to the Total Area of the Bulwark
40% or less	20%
75% or more	10%

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

(7) The lower edge of every freeing port shall be as near to the deck as practicable.

(8) Every freeing port more than 230 millimetres in depth shall be protected by rails or bars so fixed that the distance between the lowest rail or bar and the lower edge of the freeing port does not exceed 230 millimetres.

(9) Every freeing port which is fitted with a shutter shall have sufficient clearance to prevent jamming of the shutter, and the shutter hinges shall have pins or bearings of efficient non-corrodible material.

(10) Efficient provision shall be made for freeing from water any superstructure other than an enclosed superstructure.

Protection of the crew

15. (1) Every deckhouse used for the accommodation of members of the crew shall be of efficient construction.

(2) Except as otherwise provided in subparagraph (3), all exposed parts of the freeboard deck and of every superstructure deck shall be fitted at their perimeter either with efficient guard rails or guard wires and stanchions complying with the requirements of subparagraph (4) or with bulwarks, being in either case at least 1 metre in height from the deck at side.

(3) The height specified in relation to guard rails or guard wires and bulwarks in subparagraph (2) may be reduced at any particular point if—

(a) the working of the ship would be unreasonably interfered with if such minimum height were adhered to at that point; and

(b) adequate protection is provided at that point.

(4) Guard rails or guard wires fitted pursuant to subparagraph (2) shall consist of courses of rails or wires supported by stanchions efficiently secured to the deck and the opening between the lowest course of the rails or wires and the deck shall not exceed 230 millimetres in height, and no opening above that course of rails or wires shall exceed 380 millimetres in height; where the ship has rounded gunwales, the stanchions shall be secured at the perimeter of the flat of the deck.

(5) Gangways, underdeck passages and all other means of access by which members of the crew pass between their quarters, the machinery space and any other space in the ship used by them in the course of their necessary work about the ship shall be so designed and constructed, and be fitted where necessary with such life lines, access ladders, guard rails or guard wires, hand rails or other safety fittings, as to afford effective protection for the crew.

(6) the requirements of this paragraph shall not apply in the case of unmanned barges.

PART II

Special Requirements Applicable to Type "A" Ships

Application

16. The requirements of paragraphs 17 to 20 of this Part apply in the case of Type "A" ships only.

Machinery casing

17. (1) Except as provided in subparagraph (2) every casing enclosing a machinery space opening in Position 1 or Position 2 shall be protected by either—

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

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

(2) The requirements of subparagraph (1) shall not apply and the casing may accordingly be exposed—

(a) where there is no opening in the casing which gives direct access from the freeboard deck to the machinery space; or

(b) where the only opening in the casing has a steel weathertight door 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 steel weathertight door.

Gangway and access

18. (1) References in this paragraph to a poop or detached bridge include references to a deck house 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) a permanent and efficiently constructed gangway of substantial strength connecting those structures and meeting the following requirements—

(i) the gangway shall be at the level of the superstructure deck and have a platform at least 1 metre in width and of non-slip material;

(ii) efficient means of access from gangway level to the deck shall be provided at each terminal point;

(iii) 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 millimetres, and the uppermost being at least 1 metre, above the platform, and no intermediate opening being more than 380 millimetres in height and the supporting stanchions shall be at intervals of not more than 1.5 metres; or

(b) an underdeck passage connecting and providing unobstructed access between those structures and complying with the requirements of subparagraph (3); or

(c) equivalent means of access.

(3) An underdeck passage provided pursuant to subparagraph (2)*(b)* shall comply with the following requirements—

(a) the passage and all fittings therein shall be oil and gas tight;

(b) the passage shall be well lighted, and be fitted with efficient gas detection and ventilation systems;

(c) the passage shall be situated immediately below the freeboard deck;

(d) the distance of the passage from the shell plating shall at no point throughout its length be less than one fifth of the breadth (B) of the ship, however in the case of a ship so designed as to render compliance with this requirement not reasonably practicable, two underdeck passages may be provided one to port and one to starboard each of which shall comply with all requirements of this paragraph except this requirement;

(e) the means of exit from the passage to the freeboard deck shall be—

(i) so arranged as to be as near as practicable to the working areas to be used by the crew;

(ii) in no case be more than 90 metres apart; and

(iii) fitted with efficient means of closing which are capable of quick release and operable from either side;

(f) the openings in the freeboard deck corresponding to the means of exit referred to in item *(e)* shall be protected in accordance with the requirements of paragraph 8(2)*(a)*.

(4) 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 subparagraph (2)*(a)*;

(b) an underdeck passage complying with the requirements of subparagraph (3); or

(c) a walkway complying with the requirements of subparagraph (5).

(5) A walkway provided pursuant to subparagraph (4)*(c)* shall—

(a) be not less than 1 metre in width and be situated on or as near as practicable to the centre line of the ship;

(b) be fitted at each side throughout its length with guard rails or guard wires complying with the requirements set out in relation to such rails or wires in subparagraph (2)*(a)*;

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

(d) if the length of exposed deck to be traversed exceeds 70 metres, have shelters of substantial construction set in way of 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;

(e) if obstructed by pipes or other fittings of a permanent nature, be provided with efficient means of passage over such obstruction.

(6) the requirements of this paragraph shall not apply in the case of unmanned barges.

Hatchway covers

19. The covers of hatchways in an exposed position on the freeboard deck, on a forecastle deck or on the top of an expansion trunk shall be of steel, of efficient construction, and weathertight when secured.

Freeing arrangements

20. (1) All exposed parts of the freeboard deck and superstructure decks shall be fitted at their perimeter for at least half their length with guard rails or guard wires in lieu of bulwarks or with other equally effective freeing arrangements and such guard rails or guard wires shall comply with the requirements set out in relation to such rails or wires in paragraph 18(2)*(a)*.

(2) The upper edge of the sheer strake shall be as low as practicable.

(3) If superstructures of the ship are connected by a trunk, the exposed parts of the freeboard deck in way of the trunk shall be fitted at their perimeter throughout their length with guard rails or guard wires complying with the requirements set out in relation to such rails or wires in paragraph 18(2)*(a)*.

(4) If the ship is so constructed that notwithstanding the provision 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 breakwaters shall be fitted in suitable positions on that deck.

PART III

Special Requirements Applicable to Certain Type "B" Ships

Application

21. Paragraphs 22 to 25 apply only in the case of Type "B" ships to be assigned a reduced freeboard under paragraph 5 of the Fifth Schedule.

Gangway and access

22. The requirements concerning gangway and access to the ship shall comply with either—

(a) paragraph 18 as if it were Type "A" ship; or

(b) paragraphs 23 and 24.

Access between poop and detached bridge

23. (1) Reference in this paragraph to a poop or the detached bridge include references 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 an efficiently constructed gangway of substantial strength connecting those structures, fitted on or near the centre line of the ship. The gangway shall be at least one metre in width and shall be fitted at each side throughout its length with guard rails or guard wires complying with the requirements set out in relation to such rails or wires in paragraph 18(2)*(a)* and if the length of the gangway exceeds seventy metres, shelters complying with the requirements set out in relation to the shelters in paragraph 18(5)*(d)* shall be provided in way of the gangway.

Access in adverse weather conditions

24. 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—

(a) by the means described in paragraph 18(4);

(b) by the means described in paragraph 23(2); or

(c) equivalent means of access; save that in the case of a ship the hatchway coamings of which are 600 millimetres or more in height from the deck, two walkways giving access to the said positions and complying with the requirements are provided as follows:

(i) the walkways shall be efficiently constructed and of satisfactory strength;

(ii) the walkways shall be at least 1 metre in width and shall be fitted on the freeboard deck alongside the outboard structure of the hatchway coamings, one to port and the other to starboard of the hatchways;

(iii) each walkway shall be fitted on the side outboard of the hatchways with guard rails or guard wires complying with the requirements set out in relation to such rails or wires in paragraph 18(2)*(a)*.

Freeing arrangements

25. The ship shall comply with the requirements of paragraph 20(4).

PART IV

SPECIAL REQUIREMENTS APPLICABLE TO SHIPS TO BE ASSIGNED TIMBER FREEBOARDS

Application

26. The requirements of paragraphs 27 to 29 of this Part apply only in the case of ships to be assigned Timber Freeboards.

Superstructures

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

(2) If the ship is less than 100 metres in length it shall be fitted aft with either—

(a) a poop of not less than standard height; or

(b) a raised quarter deck having either a deck house or a strong steel hood, so that the total height thereof is not less than the standard height of an enclosed superstructure.

Double bottom tanks

28. Double botton tanks where fitted within the midship half length of the ship shall have satisfactory watertight longitudinal subdivision.

Bulwarks, guards, rails and stanchions

29. The ship shall be fitted with either—

(a) permanent bulwarks at least one metre in height which are specially stiffened on the upper edge and supported by strong bulwark stays attached to the deck, and are provided with freeing ports complying with the requirements of paragraph 14(1) to (6); or

(b) efficient guard rails and stanchions at least one metre in height, of specially strong construction, and complying with the requirements of paragraph 15(4).

PART V

GENERAL

Equivalent or exceptional provision

30. The Assigning Authority may with the approval of the Minister—

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

(b) allow in any exceptional case departures from the requirements of the said provisions on condition that the freeboards to be assigned to the ship are increased to such an extent as to satisfy the Minister that the safety of the ship and protection afforded to the crew will be no less effective than would be the case if the ship fully complied with those requirements and there were no such increase of freeboards.

FIFTH SCHEDULE

FREEBOARDS

(REGULATION 36)

Interpretation

1. In this Schedule expressions defined in the Fourth Schedule have the meanings thereby assigned to them respectively, and—"block coefficient": or the symbol "(C_b)" in relation to a ship means the product of—

$$\frac{\nabla}{L.Bd_1}$$

Where—

∇ is the volume of the moulded displacement of the ship (excluding bossing) if the ship has a metal shell, and of displacement to the outer surface of the hull if the ship has a shell of any other material, displacement being taken in each case at a moulded draught of d_1, and

d_1 is 85 per cent of the least moulded depth; and in no case shall the block coefficient (C_b) be taken to be less than 0.68;

"depth for freeboard" and the symbol "(D)" in relation to a ship means—

(a) except as otherwise stated in item *(b)*, the moulded depth of the ship amidships plus the thickness of the freeboard deck stringer plate where fitted, plus, where the exposed freeboard deck is sheathed, the product of $\frac{T(L)}{(S)}(L)$ where T is the mean thickness of the exposed sheathing clear of deck openings;

(b) in the case of a ship having a rounded gunwale with a radius greater than 4 per cent of the breadth of the ship (B), or having topsides of unusual form, the depth, calculated in accordance with item *(a)*, which would be the depth for freeboard purposes of a ship having a midship section with vertical topsides and with the same round of beam and the same area of topside section as that of the midship section of the first mentioned ship;

"effective length" and the symbol "(E)" in relation to a superstructure means the effective length of the superstructure ascertained in accordance with paragraph 9 of this Schedule;

"flush deck ship" means a ship which has no superstructure on the freeboard deck;

"length" and the symbol "(S)" in relation to a superstructure means the length of the superstructure ascertained in accordance with paragraph 9 of this Schedule;

"moulded depth" in relation to a ship means the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. However—

(a) in the case of a wood or composite ship, it shall be measured from the lower edge of the keel rabbet;

(b) where the form at the lower part of the midship section of the ship is of a hollow character, or if thick garboards are fitted, it shall be measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel;

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

(d) 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, it shall be measured to a line of reference extending from the lower part of the deck along a line parallel to the raised part of the deck;

"summer draught" in relation to a ship means the draught measured from—

(a) in the case of a wood or composite ship, the lower edge of the keel rabbet;

(b) where the form at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the point where the line of the flat of the bottom continued inwards cuts the side of the keel;

(c) in any other case the top of the keel;

"summer timber draught" in relation to a ship means the draught measured from point *(a)*, *(b)* or *(c)* described in the preceding definition to the point which when timber load lines have been marked on the ship's side will correspond to the upper edge of the Summer Timber load line;

"tabular freeboard" means in the case of a Type "A" ship the freeboard appropriate to the ship's length under Freeboard Table A set out in the Sixth Schedule and in the case of a Type "B" ship the Freeboard Table B in that Schedule.

Freeboards general

2. (1) Except as otherwise provided in subparagraphs (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 I of this Schedule, and Timber Freeboards to be assigned to a ship shall be determined in accordance with Part II.

(2) Freeboards determined as described in subparagraph (1) are the Freeboards appropriate to ships the structural strength of which complies with the highest standard required by an Assigning Authority; and the Freeboards 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 Minister may determine as appropriate to the ship's structural strength.

(3) The Freeboards to be assigned to—

(a) sailing ships;

(b) tugs;

(c) ships of wood or of composite construction or of other materials;

(d) ships with constructional features such as to render Freeboards determined as described in subparagraph (1) unreasonable or impracticable; and

(e) unmanned barges having on the freeboard deck only small access openings closed by watertight gasketed covers of steel; shall be determined in accordance with the provisions of Part III of this Schedule.

PART I

FREEBOARDS OTHER THAN TIMBER FREEBOARDS

Determination of freeboards

3. (1) The Summer freeboard shall be determined in accordance with the provisions of paragraphs 4 to 16 of this Schedule and the freeboard so obtained, but omitting any correction made for deckline as provided in paragraph 8, shall be not less than 50 millimetres, except in the case of a ship with hatchways in Position 1 to which paragraph 5 of the Fourth Schedule applies but which do not have pontoon covers, in which case it shall be not less than 150 millimetres.

(2) The Tropical freeboard shall be obtained by deducting from the Summer freeboard applicable to the ship one-forty-eighth ($^1/_{48}$th) of the summer draught of the ship and the freeboard so obtained, but omitting any correction made for deckline as provided in paragraph 8, shall be not less than 50 millimetres except in the case of a ship with hatchways in Position 1 to which paragraph 5 of the Fourth Schedule applies but which do not have pontoon covers, in which case it shall be not less than 150 millimetres.

(3) The Winter freeboard shall be obtained by adding to the Summer freeboard applicable to the ship one-forty-eighth ($^1/_{48}$th) of the summer draught of the ship.

(4) The Winter North Atlantic freeboard shall be obtained by adding to the Winter freeboard applicahble to the ship a distance of 50 millimetres.

(5) The Fresh Water freeboard shall, subject to subparagraph (6), be obtained by deducting from the Summer freeboard the quantity—

$$\frac{\Delta}{4\,T} \text{ millimetres}$$

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

(6) In any case in which the displacement at the water line referred to in subparagraph (5) cannot be ascertained the deduction shall be one-forty-eighth ($^1/_{48}$th) of the summer draught of the ship.

4. The Summer freeboard to be assigned to a Type "A" ship shall be determined as follows: Summer freeboard Type "A" ships

(a) there shall first be ascertained the ship's tabular freeboard;

(b) where the block coefficient (C_b) of the ship exceeds 0.68 the tabular freeboard shall be multiplied by the factor $\frac{(C_b) + 0.68}{1.36}$;

(c) corrections in accordance with paragraphs 6 to 16 of this Schedule shall be applied to the freeboard ascertained in accordance with items *(a)* and *(b)*;

(d) subject to paragraph 3(1), the freeboard so corrected shall be the Summer freeboard to be assigned to the ship.

5. (1) The Summer freeboard to be assigned to a Type "B" ship shall be determined as laid down in subparagraphs (2) to (13). Summer freeboard Type "B" ships

(2) There shall first be ascertained the ship's tabular freeboard—

(a) where the ship has hatchways in Position 1 the covers of which are—

(i) pontoon covers complying with the requirements of paragraph 5(4) of the Fourth Schedule; or

(ii) covers which comply with those of paragraph 6 of the Fourth Schedule; the tabular freeboard may be corrected in accordance with such of the provisions of subparagraphs (3) to (7) as are applicable to the ship;

(b) where the ship has hatchways in Position 1 the covers of which comply with the requirements of paragraph 5 of the Fourth Schedule, except those of subparagraph (4) of that paragraph, the tabular freeboard shall be corrected in accordance with the provisions of subparagraph (8) of this paragraph.

(3) The tabular freeboard of a ship to which subparagraph (2)*(a)* applies and which exceeds 100 metres in length may be reduced by an amount not exceeding the maximum applicable under subparagraphs (4) and (5) where the Assigning Authority is satisfied that—

(a) the measures for the protection of the crew comply with the requirements of paragraph 15 of the Fourth Schedule;

(b) the freeing arrangements comply with the requirements of paragraph 14 of the Fourth Schedule;

(c) all covers of hatchways in Positions 1 and 2 comply with the requirements of paragraph 6 of the Fourth Schedule;

(d) the ship when loaded to the Summer load waterline will remain afloat, after the flooding of any single damaged compartment other than the machinery space at an assumed permeability of 0.95, in the condition of equilibrium described in subparagraph (7); however, where the length of the ship exceeds 225 metres the machinery space shall rank as a floodable compartment for the purposes of this requirement having for the purpose an assumed permeability of 0.85

(4) Subject to subparagraph (5) no reduction of freeboard pursuant to subparagraph (3) shall exceed 60 per cent of the difference between the tabular freeboards appropriate to the ship's length under Freeboard Table A and Freeboard Table B

(5) The reduction of 60 per cent referred to in the preceding paragraph may be increased to 100 per cent where the Assigning Authority is satisfied that—

(a) the ship complies with the requirements of paragraphs 17 and 20 of the Fourth Schedule as if it were a Type "A" ship and with the requirements of paragraph 22 of that Schedule;

(b) the ship complies with the requirements of subparagraph (3)*(a)* to *(c)*; and

(c) the ship when loaded to the Summer load waterline will remain afloat in the condition of equilibrium described in subparagraph (6) after the flooding—

(i) of any two compartments adjacent fore and aft, neither of which is the machinery space, at an assumed permeability of 0.95; and

(ii) in the case of a ship exceeding 225 metres in length of the machinery space alone, at an assumed permeability of 0.85.

(6) The condition of equilibrium referred to in subparagraphs (3) and (5) is as follows:

(a) the final waterline after flooding is below the top of any ventilator coaming, the lower edge of any air pipe opening, the upper edge of the sill of any access opening fitted with a weathertight door, and the lower edge of any other opening through which progressive flooding may take place;

(b) the angle of heel due to unsymmetrical flooding does not exceed 15 degrees;

(c) the metacentric height calculated using the constant displacement method has a positive value of at least 50 millimetres in the upright condition after flooding; and

(d) the ship has adequate residual stability.

(7) The following assumptions shall be made for the purposes of calculations pursuant to subparagraphs (3)*(d)* and (5)*(c)*:

(a) that the vertical extent of damage is equal to the depth of the ship at the point of damage, measured from and including the freeboard deck at side to the underside of the keel;

(b) that the transverse penetration of damage is not more than one-fifth of the breadth of the ship (B), this distance being measured inboard from the ship's side at right angles to the centre line of the ship at the level of the Summer load waterline;

(c) that in cases where damage of a lesser extent than that described in item *(a)* or *(b)* results in a more severe condition, such lesser extent shall be assumed;

(d) that, except in the case of compartments referred to in subparagraph 5*(c)*(i), no main transverse bulkhead is damaged;

(e) that the height of the centre of gravity above the baseline is assessed allowing for homogeneous loading of cargo holds and for 50 per cent of the designed capacity of consumable fluids and stores.

(8) *(a)* Tabular freeboard of a ship to which subparagraph (2)*(b)* applies shall be increased by the amount shown by the following Table to be appropriate to the ship's length:

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	297	297
112	59	143	196	299	299
113	62	144	201	301	301
114	64	145	206	304	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

(b) freeboards at intermediate lengths of ship shall be obtained by linear interpolation;

(c) the increase in the case of ships of more than 200 metres in length shall be such amount as the Minister may determine in each particular case.

(9) Subparagraph (10) applies to every Type "B" ship of not more than 100 metres in length having enclosed superstructures the total effective length of which does not exceed 35 per cent of the ship's length (L).

(10) The freeboard calculated in respect of a ship referred to in subparagraph (10) in accordance with subparagraphs (2) and (8) shall be increased by an amount ascertained in accordance with the formula $7.5\,(100-(L)\,(0.35\,\frac{(E)}{(L)})$ millimetres.

(11) In the case of a ship the block coefficient (C_b) of which exceeds 0.68 the freeboard calculated in respect of the ship in accordance with subparagraphs (1) to (11) shall be multiplied by the factor $\frac{(C_b)+0.68}{1.36}$

(12) Corrections in accordance with paragraphs 6 to 16 of this Schedule shall be applied to the freeboard ascertained in accordance with subparagraphs (1) to (11) and, subject to paragraph 3(1), the freeboard so corrected shall be the summer freeboard to be assigned to the ship.

Basic freeboard

6. In the following paragraphs of this Schedule "basic freeboard" in relation to a ship means the Summer freeboard calculated for the ship in accordance with paragraph 4 or 5 whichever is applicable, but in the case of a Type "A" ship the corrections referred to in paragraph 4*(c)* and in the case of a Type "B" ship the corrections referred to in paragraph 5(13).

Correction for depth

7. (1) Where the depth of freeboard (D) of a ship exceeds $\frac{(L)}{15}$ the basic freeboard of the ship shall be increased by $((D)-\frac{(L)}{15})\,R$ millimetres, R for this purpose being taken to be $\frac{(L)}{0.48}$ in the case of a ship less than 120 metres in length, and 250 metres in the case of a ship of 120 metres or more in length.

(2) Where the depth for freeboard (D) of a ship is less than $\frac{(L)}{15}$ the basic freeboard of the ship shall be reduced by $((D)-\frac{(L)}{15})\,R$ millimetres if the ship has either—

(a) an enclosed superstructure covering at least 0.6 (L) amidships;

(b) an efficient trunk extending for the ship's length (L); or

(c) a combination of enclosed superstructures connected by efficient trunks, being a combination extending for the ship's length (L);

however, where the height of any such superstructure or trunk is less than standard height, the amount of such reduction shall be reduced in the ratio of the actual to the standard height of the superstructure or trunk.

Correction for position of deck

8. Where the actual depth to the upper edge of the deckline is greater or less than the depth for freeboard (D), the difference if greater shall be added to, or if less shall be deducted from, the basic freeboard of the ship; however, in a case in which the position of the deckline has been fixed in accordance with Regulation 23(3) the actual depth of the ship shall be taken for the purposes of the foregoing requirement to the point amidships where the continuation outwards of the upper surface of the freeboard deck or of any sheathing of that deck intersects the outer surface of the shell of the ship.

Standard height, length and effective length of superstructures

9. (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:

Length of ship (L) (metres)	Standard Height (metres)	
	of a raised quarter deck	of a superstructure other than a raised quarter deck
30 or less	0.90	1.80
75	1.20	1.80
125 or more	1.80	2.30

standard heights for intermediate lengths of ship shall be obtained by linear interpolation.

(2) Subject to subparagraph (3) 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).

(3) In the case of an enclosed superstructure having an end bulkhead which extends in a fair convex curve beyond its intersection with the superstructure sides, the length of the superstructure (S) may be taken as its length ascertained in accordance with subparagraph (2) increased on the basis of an equivalent plane bulkhead by the amount of two-thirds of the fore and aft extent of the curvature, so however that the amount of the curvature to be taken into account shall not exceed one-half the breadth of the superstructure at the point of intersection of the curved end of the superstructure with its side.

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

(a) subject to item *(c)*, (E) in the case of an enclosed superstructure of standard height shall be either—

(i) its length (S); or

(ii) 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 (S) and "Bs" is the breadth of the ship at the middle of the length of the superstructure (S),

so however that if the superstructure is so set in for part only of its length, such modification shall be applied only to that part;

(b) subject to item *(c)*, (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;

(c) (E) in the case of an enclosed superstructure consisting of a raised quarter deck shall, if the deck is fitted with an intact front bulkhead, be its length (S) subject to a maximum of 0.6 of the ship's length (L); and if not so fitted, be ascertained by treating the raised quarter deck as a poop of less than standard height.

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

Standard height and effective length of trunks

10. (1) The standard height of a trunk shall be determined in the same manner as that applicable to a superstructure, other than a raised quarter deck, under paragraph 9(1).

(2) A trunk shall be treated as an efficient trunk subject to the following conditions:

(a) that it shall be at least as strong as a superstructure;

(b) that the hatchways in way of the trunk are in the trunk deck, and the hatchway coamings and covers comply with the requirements of paragraphs 4 to 6 of the Fourth Schedule; so however that small access openings with watertight covers shall be permitted in the freeboard deck;

(c) that the width of the trunk deck stringer provides a satisfactory gangway and sufficient lateral stiffness;

(d) that a permanent working platform fore and aft fitted with guard rails or guard wires complying with the requirements applicable thereto under paragraph 18(2)*(a)* of the Fourth Schedule is provided by the trunk deck, or by detached trunks connected to superstructures by efficient permanent gangways;

(e) that ventilators are protected by the trunk, by watertight covers or by equivalent means;

(f) that open rails or wires are fitted on the weather parts of the freeboard deck in way of the trunk for at least half their length;

(g) that the machinery casings are protected by the trunk, or by an enclosed superstructure of at least standard height, or by a deckhouse of the same height and of strength and weathertightness equivalent to those of such a superstructure;

(h) that the breadth of the trunk is at least 60 per cent of the breadth of the ship (B);

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

(3) The effective length of a trunk shall be determined as follows:

(a) except as otherwise provided in item *(b)*, the effective length of an efficient trunk shall be its full length reduced in the ratio of its mean breadth to the breadth of the ship (B);

(b) where the actual height of an efficient trunk is less than the standard height, its effective length shall be the length calculated in accordance with item *(a)* reduced in the ratio of the actual to the standard height of the trunk; in addition, if the ship is a Type "B" ship and the height of hatchway coamings on the trunk deck is less than that required by paragraph 5(1) or 6(1) of the Fourth Schedule a reduction from the actual height of the trunk shall be made of an amount corresponding to the difference between the actual height of such coamings and the height so required for them.

(4) A trunk which is not an efficient trunk as described in subparagraph (2) shall have no effective length.

Deduction for effective length of superstructures and trunks

11. (1) Where the sum of the effective lengths of superstructures of a ship is 1.0 (L), the basic freeboard of the ship shall be reduced—

(a) by 350 millimetres if the ship is 24 metres in length (L);

(b) by 860 millimetres if the ship is 85 metres in length (L);

(c) by 1070 millimetres if the ship is 122 metres in length (L) or more; and

(d) by amounts obtained by linear interpolation in the case of ships of intermediate length.

(2) The basic freeboard of a ship shall be reduced according to the total effective length of her superstructures and trunks as follows:

(a) in the case of a Type "A" ship, by a percentage ascertained by reference to the following Table A:

TABLE A

PERCENTAGE OF DEDUCTION FOR TYPE "A" SHIPS

	Total effective length of superstructures and trunks										
	0	0.1 (L)	0.2 (L)	0.3 (L)	0.4 (L)	0.5 (L)	0.6 (L)	0.7 (L)	0.8 (L)	0.9 (L)	1.0 (L)
Percentage of deduction for all types of superstructures	0	7	14	21	31	41	52	63	75.3	87.7	100

(b) the percentage of deduction in the case of a Type "A" ship having superstructures and trunks of an effective length intermediate to those specified in Table A shall be ascertained by linear interpolation;

(c) in the case of a Type "B" ship, by a percentage ascertained by reference to the following Table B and to such of directions in item *(e)*(i) to (iii) as apply in the circumstances.

TABLE B

PERCENTAGE OF DEDUCTION FOR TYPE "B" SHIPS

		Total effective length of superstructures and trunks										
	Line	0	0.1 (L)	0.2 (L)	0.3 (L)	0.4 (L)	0.5 (L)	0.6 (L)	0.7 (L)	0.8 (L)	0.9 (L)	1.0 (L)
Ships with forecastle and without detached bridge	1	0	5	10	15	23.5	32	45	63	75.3	87.7	100
Ships with forecastle and detached bridge	11	0	6.3	12.7	19	27.5	36	46	63	75.3	87.7	100

(d) the percentage of deduction in the case of a Type "B" ship having superstructures and trunks of an effective length intermediate to those specified in Table B shall be ascertained by linear interpolation;

(e) (i) where the effective length of a bridge covers less than 0.1 (L) before amidships and 0.1 (L) abaft amidships, the percentages shall be obtained by linear interpolation between the lines I and II;

(ii) where the effective length of a forecastle is more than 0.4 (L), the percentages shall be obtained from line II;

(iii) where the effective length of a forecastle is less than 0.07 (L), the percentage obtained in accordance with sub-item (ii) shall be reduced by $5 \times \frac{0.07\,(L) - f}{0.07\,(L)}$ where "f" is the effective length of the forecastle.

Measurement of sheer

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

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

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

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

(5) In ships with a superstructure of standard height which extends over the whole length of the freeboard deck, the sheer shall be measured at the superstructure deck.

(6) Where in ships referred to in subparagraph (5) the height of the superstructure exceeds the standard height the least difference (Z) between the actual and standard heights shall be added to each end ordinate.

(7) In ships referred to in subparagraph (5) the intermediate ordinates at distances of 1/6 (L) and 1/3 (L) from each perpendicular shall be increased by 0.444 (Z) and 0.111(Z) respectively.

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

(9) Where an enclosed poop or forecastle is either—

(a) of standard height with greater sheer than that of the freeboard deck; or

(b) is of more than standard height,

an addition to the sheer of the freeboard deck shall be made calculated in accordance with paragraph 14(6) .

13. The ordinates of the standard sheer profile are given in the following table: Standard sheer profile

	Station	Ordinate (in millimetres)	Factor
After half	After perpendicular.....	$25\ (\frac{(L)}{3} + 10)$	1
	1/6 (L) from A.P.	$11.1\ (\frac{(L)}{3} + 10)$	3
	1/3 (L) from A.P.	$2.8\ (\frac{(L)}{3} + 10)$	3
	Amidships.....	0	1
Forward half	Amidships.....	0	1
	1/3 (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

14. (1) Where the sheer profile of a ship differs from the standard sheer profile, the four ordinates of each profile in the forward and after halves of the ship shall be multiplied by the appropriate factors given in the Table of Ordinates in paragraph 13; the difference between the sums of the respective products and those of the standard divided by 8 shall be the deficiency or excess of sheer in the forward or after half; the arithmetical mean of the excess or deficiency in the forward and after halves shall be the excess or deficiency of sheer. Measurement of variation from standard sheer profile

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

(3) 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 the standard sheer profile, credit shall be allowed for the part in excess.

(4) 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 of sheer forward.

(5) Where the sheer in the after half is between 50 per cent and 75 per cent of the standard sheer profile, intermediate allowance may be granted for excess sheer forward.

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

$$s = \frac{y}{3} \times \frac{L}{(L)}$$

Where s = sheer credit to be deducted from the deficiency or added to the excess of sheer;

y = difference between actual and standard height of superstructure at the end ordinate of sheer; and

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

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

Correction for variation from standard sheer profile

15. (1) The correction for sheer shall be the deficiency or excess of sheer determined in accordance with paragraph 14 multiplied by—

$$0.75 \frac{-S}{2(L)}$$

(2) In the case of a ship with sheer less than the standard sheer profile, the correction for deficiency of sheer determined in accordance with subparagraph (1) shall be added to the basic freeboard of the ship.

(3) Subject to subparagraph (4), in the case of a ship having an excess of sheer—

(a) where an enclosed superstructure covers 0.1 (L) before and 0.1 (L) abaft amidships, the correction for excess of sheer determined in accordance with subparagraph (1) shall be deducted from the basic freeboard of the ship;

(b) where no enclosed superstructure covers amidships, no deductions shall be made from the basic freeboard of the ship;

(c) where the enclosed superstructure covers less than 0.1 (L) before and 0.1 (L) abaft amidships, the correction for excess of sheer determined in accordance with subparagraph (1) shall be modified in the ratio of the amount of 0.2 (L) amidships which is covered by the superstructure, to 0.2 (L).

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

Correction for minimum bow height

16. (1) Except as otherwise provided in subparagraphs (2) and (3), where the bow height of a ship determined in accordance with subparagraph (4) is less than the minimum bow height appropriate to the ship determined in accordance with subparagraph (5), the freeboard determined for the ship in accordance with paragraphs 3 to 15 shall be increased by an amount equal to the difference between the bow height and the minimum bow height.

(2) Where an existing ship to which subparagraph (1) applies has been so constructed or modified as to comply with all the requirements of the Fourth Schedule applicable to a new ship of her type and is to be assigned freeboard determined in accordance with this Schedule, and—

(a) the forecastle is less than 0.07 (L); or

(b) the sheer extends for less than 15 per cent of the ship's length (L) measured from the forward perpendicular,

the freeboard determined for the ship in accordance with paragraphs 3 to 15 shall be increased by such amount as the Minister may determine in each particular case.

(3) In the case of a ship to which subparagraph (1) applies, being a ship which is constructed to meet exceptional operational requirements, the correction to be made pursuant to the preceding subparagraphs may be reduced or waived if the Minister is satisfied that the safety of the ship will not be impaired in consequence in the worst sea and weather conditions likely to be encountered by the ship in service.

(4) The bow height of a ship is the vertical distance at the forward perpendicular between the Summer load waterline of the ship at the designed trim and the top of the exposed deck at side ascertained as follows:

(a) where the bow height is obtained by including sheer, the sheer shall extend for not less than 15 per cent of the ship's length (L) measured from the forward perpendicular;

(b) where the bow height is obtained by including the height of a superstructure, such superstructure shall—

(i) extend from the stem to a point not less than 0.07 of the ship's length (L) measured from the forward perpendicular;

(ii) if the ship's length (L) is 100 metres or less, be an enclosed superstructure; and

(iii) if the ship's length (L) exceeds 100 metres in length, be fitted with satisfactory closing appliances.

(5) The minimum bow height for a ship shall be derived from formula 1 in the case of a ship of less than 250 metres in length (L) and from formula 2 in the case of a ship of 250 metres or more in length (L)—

Formula 1

$$56\,(L) \quad \frac{1-(L)}{500} \quad \frac{1.36}{C_b + 0.68} \quad \text{millimetres}$$

Formula 2

$$\frac{7000}{C_b + 0.68} \quad 1.36 \quad \text{millimetres}$$

C_b being taken as not less than 0.68 in the case of each formula.

PART II

TIMBER FREEBOARDS

Summer timber freeboard

17. The Summer Timber Freeboard shall be determined as follows:

(a) there shall first be ascertained the freeboard appropriate to the ship under paragraphs 5(2), (3)*(a)*, (10), (11), (12) and (13);

(b) corrections shall be applied to the freeboard so obtained in accordance with paragraphs 6 to 10;

(c) deductions for the effective length of superstructures only shall be made from the freeboard obtained pursuant to the preceding items, in accordance with subparagraphs 11(1), (2)*(c)*, *(d)* but substituting for the Table "Percentage of Deduction for Type 'B' ships" therein the following Table:

TABLE

	Total effective length of superstructures										
	0	0.1 (L)	0.2 (L)	0.3 (L)	0.4 (L)	0.5 (L)	0.6 (L)	0.7 (L)	0.8 (L)	0.9 (L)	1.0 (L)
Percentage of deduction for all types of super-structures	20	31	42	53	64	70	76	82	88	94	100

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

(d) corrections shall be applied to the freeboard obtained pursuant to the preceding items in accordance with paragraphs 12 to 15 and the freeboard so corrected shall be the Summer Timber freeboard to be assigned to the ship.

Other timber freeboards

18. (1) The Winter Timber freeboard shall be obtained by adding to the Summer Timber Freeboard one-thirty-sixth ($^1/36$th) of the summer timber draught of the ship.

(2) The Winter North Atlantic Timber freeboard shall be the 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-eighth ($^1/48$th) of the summer timber draught of the ship.

(4) The Fresh Water Timber freeboard shall, subject to subparagraph (5), be obtained by deducting from the Summer Timber freeboard the quantity—

$$\frac{\Delta}{4T} \text{ millimetres}$$

where Δ is the displacement in salt water in metric tonnes 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 tonnes per centimetre immersion in salt water at that waterline.

(5) In any case in which the displacement at the waterline referred to in subparagraph (4) cannot be ascertained the deduction shall be one forty-eighth ($^1/48$th) of the summer timber draught of the ship.

PART III

SAILING SHIPS AND OTHER SHIPS

Sailing ships and tugs

19. The freeboards to be assigned to sailing ships and tugs shall be freeboards determined in accordance with Part I of this Schedule increased by such amounts as the Minister may direct in each particular case.

Ships of wood and other ships

20. The freeboards to be assigned to ships of wood or of composite construction or of other materials, or to ships with constructional features such as to render freeboards calculated in accordance with Part I of this Schedule unreasonable or impracticable shall be determined by the Minister in each particular case.

Unmanned barges

21. The freeboards to be assigned to unmanned barges having on the freeboard deck only small access openings closed by watertight gasketed covers of steel shall be freeboards determined in accordance with Part I of this Schedule omitting paragraphs 5 and 16 and such freeboards may be reduced by such amounts not exceeding 25 per cent as the Minister may direct in each particular case.

SIXTH SCHEDULE

FREEBOARD TABLES

(Fifth Schedule)

1. The following is Freeboard Table A referred to in the definition of "tabular freeboard" in paragraph 1 of the Fifth 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	72	733	120	1459
25	208	73	746	121	1476
26	217	74	760	122	1494
27	225	75	773	123	1511
28	233	76	786	124	1528
29	242	77	800	125	1546
30	250	78	814	126	1563
31	258	79	828	127	1580
32	267	80	841	128	1598
33	275	81	855	129	1615
34	283	82	869	130	1632
35	292	83	883	131	1650
36	300	84	897	132	1667
37	308	85	911	133	1684
38	316	86	926	134	1702
39	325	87	940	135	1719
40	334	88	955	136	1736
41	344	89	969	137	1753
42	354	90	984	138	1770
43	364	91	999	139	1787
44	374	92	1014	140	1803
45	385	93	1029	141	1820
46	396	94	1044	142	1837
47	408	95	1059	143	1853
48	420	96	1074	144	1870
49	432	97	1089	145	1886
50	443	98	1105	146	1903
51	455	99	1120	147	1919
52	467	100	1135	148	1935
53	478	101	1151	149	1952
54	490	102	1166	150	1968
55	503	103	1181	151	1984
56	516	104	1196	152	2000
57	530	105	1212	153	2016
58	544	106	1228	154	2032
59	559	107	1244	155	2048
60	573	108	1260	156	2064
61	587	109	1276	157	2080
62	600	110	1293	158	2096
63	613	111	1309	159	2111
64	626	112	1326	160	2126
65	639	113	1342	161	2141
66	653	114	1359	162	2155
67	666	115	1376	163	2169
68	680	116	1392	164	2184
69	693	117	1409	165	2198
70	706	118	1426	166	2212
71	720	119	1442	167	2226

TABLE A—CONTINUED

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)
168	2240	221	2801	274	3148
169	2254	222	2809	275	3153
170	2268	223	2817	276	3158
171	2281	224	2825	277	3163
172	2294	225	2833	278	3167
173	2307	226	2841	279	3172
174	2320	227	2849	280	3176
175	2332	228	2857	281	3181
176	2345	229	2865	282	3185
177	2357	230	2872	283	3189
178	2369	231	2880	284	3194
179	2381	232	2888	285	3198
180	2393	233	2895	286	3202
181	2405	234	2903	287	3207
182	2416	235	2910	288	3211
183	2428	236	2918	289	3215
184	2440	237	2925	290	3220
185	2451	238	2932	291	3224
186	2463	239	2939	292	3228
187	2474	240	2946	293	3233
188	2486	241	2953	294	3237
189	2497	242	2959	295	3241
190	2508	243	2966	296	3246
191	2519	244	2973	297	3250
192	2530	245	2979	298	3254
193	2541	246	2986	299	3258
194	2552	247	2993	300	3262
195	2562	248	3000	301	3266
196	2572	249	3006	302	3270
197	2582	250	3012	303	3274
198	2592	251	3018	304	3278
199	2602	252	3024	305	3281
200	2612	253	3030	306	3285
201	2622	254	3036	307	3288
202	2632	255	3042	308	3292
203	2641	256	3048	309	3295
204	2650	257	3054	310	3298
205	2659	258	3060	311	3302
206	2669	259	3066	312	3305
207	2678	260	3072	313	3308
208	2687	261	3078	314	3312
209	2696	262	3084	315	3315
210	2705	263	3089	316	3318
211	2714	264	3095	317	3322
212	2723	265	3101	318	3325
213	2732	266	3106	319	3328
214	2741	267	3112	320	3331
215	2749	268	3117	321	3334
216	2758	269	3123	322	3337
217	2767	270	3128	323	3339
218	2775	271	3133	324	3342
219	2784	272	3138	325	3345
220	2792	273	3143	326	3347

TABLE A—CONTINUED

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)
327	3350	340	3382	353	3412
328	3353	341	3385	354	3414
329	3355	342	3387	355	3416
330	3358	343	3389	356	3418
331	3361	344	3392	357	3420
332	3363	345	3394	358	3422
333	3366	346	3396	359	3423
334	3368	347	3399	360	3425
335	3371	348	3401	361	3427
336	3373	349	3403	362	3428
337	3375	350	3406	363	3430
338	3378	351	3408	364	3432
339	3380	352	3410	365	3433

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

2. The following is Freeboard Table B referred to in the definition of "tabular freeboard" in paragraph 1 of Schedule 5—

TABLE B

FREEBOARD TABLE FOR TYPE "B" SHIPS

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)
24	200	72	754	120	1690
25	208	73	769	121	1709
26	217	74	784	122	1729
27	225	75	800	123	1750
28	233	76	816	124	1771
29	242	77	833	125	1793
30	250	78	850	126	1815
31	258	79	868	127	1837
32	267	80	887	128	1859
33	275	81	905	129	1880
34	283	82	923	130	1901
35	292	83	942	131	1921
36	300	84	960	132	1940
37	308	85	978	133	1959
38	316	86	996	134	1979
39	325	87	1015	135	2000
40	334	88	1034	136	2021
41	344	89	1054	137	2043
42	354	90	1075	138	2065
43	364	91	1096	139	2087
44	374	92	1116	140	2109
45	385	93	1135	141	2130
46	396	94	1154	142	2151
47	408	95	1172	143	2171
48	420	96	1190	144	2190
49	432	97	1209	145	2209
50	443	98	1229	146	2229
51	455	99	1250	147	2250
52	467	100	1271	148	2271
53	478	101	1293	149	2293
54	490	102	1315	150	2315
55	503	103	1337	151	2334
56	516	104	1359	152	2354
57	530	105	1380	153	2375
58	544	106	1401	154	2396
59	559	107	1421	155	2418
60	573	108	1440	156	2440
61	587	109	1459	157	2460
62	601	110	1479	158	2480
63	615	111	1500	159	2500
64	629	112	1521	160	2520
65	644	113	1543	161	2540
66	659	114	1565	162	2560
67	674	115	1587	163	2580
68	689	116	1609	164	2600
69	705	117	1630	165	2620
70	721	118	1651	166	2640
71	738	119	1671	167	2660

TABLE B—CONTINUED

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)
168	2680	221	3601	274	4327
169	2698	222	3615	275	4339
170	2716	223	3630	276	4350
171	2735	224	3645	277	4362
172	2754	225	3660	278	4373
173	2774	226	3675	279	4385
174	2795	227	3690	280	4397
175	2815	228	3705	281	4408
176	2835	229	3720	282	4420
177	2855	230	3735	283	4432
178	2875	231	3750	284	4443
179	2895	232	3765	285	4455
180	2915	233	3780	286	4467
181	2933	234	3795	287	4478
182	2952	235	3808	288	4490
183	2970	236	3821	289	4502
184	2988	237	3835	290	4513
185	3007	238	3849	291	4525
186	3025	239	3864	292	4537
187	3044	240	3880	293	4548
188	3062	241	3893	294	4560
189	3080	242	3906	295	4572
190	3098	243	3920	296	4583
191	3116	244	3934	297	4595
192	3134	245	3949	298	4607
193	3151	246	3965	299	4618
194	3167	247	3978	300	4630
195	3185	248	3992	301	4642
196	3202	249	4005	302	4654
197	3219	250	4018	303	4665
198	3235	251	4032	304	4676
199	3249	252	4045	305	4686
200	3264	253	4058	306	4695
201	3280	254	4072	307	4704
202	3296	255	4085	308	4714
203	3313	256	4098	309	4725
204	3330	257	4112	310	4736
205	3347	258	4125	311	4748
206	3363	259	4139	312	4757
207	3380	260	4152	313	4768
208	3397	261	4165	314	4779
209	3413	262	4177	315	4790
210	3430	263	4189	316	4801
211	3445	264	4201	317	4812
212	3460	265	4214	318	4823
213	3475	266	4227	319	4834
214	3490	267	4240	320	4844
215	3505	268	4252	321	4855
216	3520	269	4264	322	4866
217	3537	270	4276	323	4878
218	3554	271	4289	324	4890
219	3570	272	4302	325	4899
220	3586	273	4315	326	4909

TABLE B—CONTINUED

Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)	Length of ship (metres)	Freeboard (millimetres)
327	4920	340	5055	353	5190
328	4931	341	5065	354	5200
329	4943	342	5075	355	5210
330	4955	343	5086	356	5220
331	4965	344	5097	357	5230
332	4975	345	5108	358	5240
333	4985	346	5119	359	5250
334	4995	347	5130	360	5260
335	5005	348	5140	361	5268
336	5015	349	5150	362	5276
337	5025	350	5160	363	5285
338	5035	351	5170	364	5294
339	5045	352	5180	365	5303

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

SEVENTH SCHEDULE

(Regulations 12, 13, 17, 38 and 42)

STABILITY AND LOADING

PART I

STABILITY CRITERIA

A—General

1. The stability of any ship shall be adequate for all probable loading conditions and drafts and at no time shall the appropriate freeboard mark be submerged. **Adequate stability**

2. Except where the Minister otherwise requires, having due regard to any special design features and service conditions, the stability of a ship will be considered as satisfactory upon compliance with the appropriate criteria contained in Part B. **Stability to comply with criteria**

3. In order to properly assess the stability characteristics of a vessel and to determine the degree of compliance with the appropriate stability criteria, the basic stability data shall be based on an inclining test of the ship in the light ship condition, in accordance with regulation 42. **Inclining Test**

B—Details of Stability Criteria

4. Passengers and cargo ships shall meet the following criteria: **Passenger and Cargo ship**

(a) the area under the curve of righting levers (GZ curve) shall not be less than—

(i) 0.055 metre-radians up to an angle of 30°;

(ii) 0.09 metre-radians up to an angle of either 40° or the angle at which the lower edges of any openings in the hull, superstructures or deckhouses, being openings which cannot be closed weathertight, are immersed if that angle is less;

(iii) 0.03 metre-radians between the angles of heel of 30° and 40° or such lesser angle as is referred to in sub-item (ii);

(b) the righting lever (GZ) shall be at least 0.20 metres at an angle of heel equal to or greater than 30°;

(c) the maximum righting level (GZ) shall occur at an angle of heel preferably exceeding 30° but in any case not less than 25°;

(d) the initial metacentric height (GM) should not be less than 0.15 metres.

5. (1) For ships loaded with timber deck cargoes, the following criteria may be substituted for the criteria given in paragraph 4: **Timber deck cargoes**

(a) the area under the righting lever (GZ curve) shall not be less than 0.08 metre-radians up to an angle of either 40° or the angle at which the lower edges of any openings in the hull, superstructures or deck houses, being openings which cannot be closed weathertight, are immersed if that angle is less;

(b) the maximum value of the righting level (GZ) should be at least 0.25 metres;

(c) at all times during a voyage the metacentric height (GM) should be positive after correction for the free surface effects of liquid in tanks and, where appropriate, the absorption of water by the deck cargo or ice accretion on the exposed surfaces;

(d) in the departure condition the metacentric height should be less than 0.10 metres.

(2) In all cases the timber deck cargo shall—

(a) be compactly stowed;

(b) extended longitudinally between superstructures, or, where there is no

limiting superstructure at the after end of the ship, the cargo shall extend at least to the after end of the aftermost hatchway;

(c) extend transversely for the full beam of the ship after due allowance, not exceeding 4 per cent of the breadth of the ship, for a rounded gunwale or the fitting of the supporting uprights used in securing the cargo;

(d) remain securely fixed at large angles of heel.

Additional criteria for passenger ships

6. The following addition criteria shall apply to passenger ships:

(a) the angle of heel on account of passengers crowding to one side of the ship shall not exceed 10°, using, under normal circumstances, a passenger distribution value of 4 persons per square metre.

(b) The angle of heel on account of turning should not exceed 10° when calculated using the following formula:

$$M_R = 0.02 \frac{V_o^2}{L} \Delta \left(KG - \frac{d}{2}\right)$$

Where:

M_R = heeling moment in metre-tonnes;

V_o = service speed in m/s;

L = length of ship at waterline in metres;

Δ = displacement in salt water in metric tonnes;

d = means draught in metres;

KG = height of centre of gravity above keel in metres.

Weather criteria

7. (1) New decked sea-going passenger and cargo ships of 24 metres in length and over, in addition to meeting the appropriate stability criteria laid down in paragraphs (4), (5) and (6), shall also comply with the weather criteria laid down in this paragraph.

(2) The ability of the ship to withstand the combined effects of beam wind and rolling should be demonstrated, with reference to Figure 1 and Tables 1 to 4 as contained in sub-paragraph (5), for each standard condition of loading referred to in paragraphs 18, 19, and 20, as follows:

(a) the ship is subjected to a steady wind pressure acting perpendicular to the ship's centreline which results in a steady wind heeling level (lw_1);

(b) from the resultant angle of equilibrium Q which should not exceed 16° or 80 per cent of the angle of deck edge immersion, whichever is less, the ship is assumed to roll, owing to wave action, to windward to an angle of roll Q_1;

(c) the ship is then subjected to a gust wind pressure which results in a gust wind heeling lever (lw_2);

(d) under these circumstances, with reference to figure 1, area "b" should be equal to or greater than area "a";

(e) free surface effects should be taken into account, in accordance with paragraph 16 for each standard condition of loading being investigated.

(3) The wind heeling levers lw_1 and lw_2 referred to in sub-paragraph (2) are constant values at all angles of inclination and should be calculated as follows:

$$lw_1 = \frac{P.A.Z}{\Delta} \text{ (m) and}$$

$$lw_2 = 1.51 lw_1 \text{ (m)}$$

where:

P = 0.0514 tonnes per square metre under normal conditions or such lesser value as may be approved by the Minister for ships in restricted service;

A = projected lateral area in square meters of the portion of the ship and deck cargo above the waterline;

Z = vertical distance in metres from the centre of A to the centre of the underwater lateral area or approximately to a point at one-half the draught;

Δ = displacement (tonnes).

(4) The angle of roll (Q_1) referred to in sub-paragraph (2) should be calculated, without taking into account the operation of any anti-rolling devices which may be fitted, as follows:

$$Q_1 = 10gk.X_1X_2.\sqrt{r.s} \text{ (degrees);}$$

where:

X_1 = factor as shown in table 1;

X_2 = factor as shown in table 2;

K = factor as follows;

K = 1.0 for round-bilged ship having no bilge or bar keels;

K = 0.7 for a ship having sharp bilges;

K = as shown in table 3 for a ship having bilge keels, a bar keel or both;

r = 0.73 + 0.8 OG/d;

where:

OG = distance in metres between the centre of gravity and the waterline (+ if centre of gravity is below the waterline – if it is below);

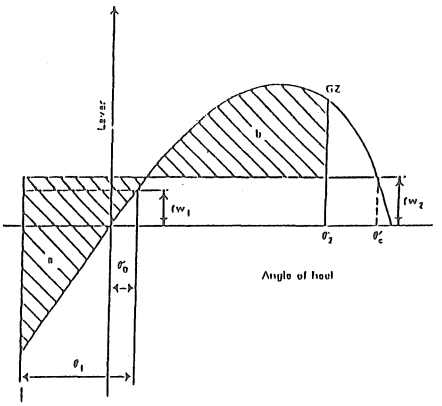
d = mean moulded draught in metres of the ship;

s = factor as shown in table 4.

(5) The figure and tables referred to in sub-paragraphs (2) and (4) are as follows:

FIGURE 1

Severe wind and rolling criterion



The angle in the above figure are defined as follows:

θ_0 = angle of heel under action of steady wind;

θ_1 = angle of roll to windward due to wave action;

θ_2 = angle of downflooding (θ_1) or 50° or Q_c whichever is less;

where:

θ_f = angle of heel at which openings in the hull, superstructures or deckhouses which cannot be closed weathertight immerse; in applying this criterion shall;

θ_c = angle of second intercept between wind heeling lever 1 w_2 and GZ curves.

Table 1
Values of factor X_1

B/d	X_1
< 2.4	1.0
2.5	0.98
2.6	0.96
2.7	0.95
2.8	0.93
2.9	0.91
3.0	0.90
3.1	0.88
3.2	0.86
3.3	0.84
3.4	0.82
>3.5	0.80

Table 2
Values of factor X_2

C_B	X_2
< 0.45	0.75
0.50	0.82
0.55	0.89
0.60	0.95
0.65	0.97
> 0.70	1.0

Table 3
Values of factor k

$\frac{Ak.100}{L.B}$	k
0	1.0
1.0	0.98
1.5	0.95
2.0	0.88
2.5	0.79
3.0	0.74
3.5	0.72
< 4.0	0.70

Table 4
Values of factor s

T	s
< 6	0.100
7	0.098
8	0.093
12	0.065
14	0.053
16	0.044
18	0.038
> 20	0.035

(Intermediate values in tables 1–4 should be obtained by linear interpolation.)

Rolling period $T = \frac{2\,C.B.}{GM}$ (seconds)

where: $C = 0.373 + 0.023\,(B/d) - 0.043\,(L/100)$.

The symbols in the above tables and formula for the rolling period are defined as follows:

- L = waterline length of the ship (m);
- B = moulded breadth of the ship (m);
- d = mean moulded draught of the ship (m);
- C_B = block coefficient;
- A_K = total overall area of bilge keels, or area of the lateral projection of the bar keel, or sum of these areas (m^2);
- GM = metacentric height corrected for free surface effect (m).

PART II

Calculation of Stability Curves and Related Data

A—General

Calculation of stability curves

8. Hydrostatic and stability curves should normally be prepared on a designed trim basis, however, where the operating trim or the form and arrangement of the ship are such that change in trim has an appreciable effect on righting arms, such change in trim should be taken into account.

Dimentions of hull

9. The calculation of hydrostatic and stability curves should take into account the volume of the hull to the upper surface of the deck sheathing; and in the case of wood ships the dimensions for breadth should be taken to the outside of the hull planking.

B— Superstructures, Deckhouses and Tanks which may be taken into Account

Treatment of spaces

10. The volumes of superstructures, deckhouses and trunks are to be dealt with, so far as their contribution to the ship's buoyancy is concerned, in accordance with paragraphs 11 to 15.

Super-structures

11. (1) Enclosed superstructures as defined in and meeting the requirements of paragraph 1 of the Fourth Schedule may be taken into account.

(2) The second tier of similarly enclosed superstructures may also be taken into account.

Deckhouses

12. (1) Deckhouses which are situated on the freeboard deck—

(a) which comply with the conditions for enclosed superstructures as in paragraph 11 may be taken into account;

(b) which comply with the conditions for enclosed superstructures as in paragraph 11, except that no additional exit from the deckhouse to the deck above is provided, shall not be taken into account; however, any deck openings inside such deckhouses shall be considered as closed even where no means of closure is provided;

(c) the doors of which do not comply with the requirements of paragraph 1 of the Fourth Schedule shall not be taken into account; however, any deck openings inside the deckhouse may be regarded as closed where their means of closure comply with the requirements of paragraphs 5, 7, or 8 of the Fourth Schedule.

(2) Except as provided in subparagraph (3), deckhouses situated on decks above the freeboard deck shall not be taken in to account, but openings within them may be considered as closed.

(3) Subject to the approval of the Minister, a deckhouse situated on a deck above the freeboard deck may be taken into account where—

(a) its location and integrity are such that it will contribute to the ship's stability;

(b) it is weathertight as defined in paragraph 1 of the Fourth Schedule.

Flooding of openings

13. (1) Superstructures and deckhouses which do not comply with the requirements for being considered enclosed may be taken into account in stability calculations up to the angle at which their openings are flooded; at this angle the static stability curve should show one or more steps, and in subsequent computations the flooded space should be regarded as non-existent.

(2) In cases where the ship would sink due to flooding through any openings the stability curve should be cut short at the corresponding angle of flooding and the ship should be considered as having entirely lost her stability.

Trunks

14. An efficient trunk, as defined in and meeting the requirements of paragraph 10 of the Fifth Schedule, may be taken into account.

Hatchways

15. Hatchways may be taken into account having regard to the effectiveness of their closures.

C—Effects of Free Surface

Free Surface corrections

16. For all conditions, the metacentric height and the stability curves should be corrected for the effect of free surfaces of liquids in tanks in accordance with the following assumptions:

(a) tanks which are taken into consideration when determining the effect of liquids on the stability at all angles of inclination should include single tanks or combinations of tanks for each kind of liquid, including those for water ballast, which, according to the service conditions, can simultaneously have free surfaces;

(b) for the purposes of determining this free surface correction, the tanks assumed slack should be those which develop the greatest free surface moment, $M_{R\cdot 6}$ at a 30° inclination when in the 50 per cent full condition;

(c) the value of $M_{r\cdot s}$ for each tank may be derived from the formula:

$$M_{r.s} = vb_rk\sqrt{b}$$

where:

$M_{r\cdot s}$ = the free surface moment at any inclination in metre-tons;

v = the tank total capacity in m^3;

b = the tank maximum breadth in m;

r = the specific weight of liquid in the tank in $1/m^3$;

o = $\frac{v}{blh}$ = the tank block coefficient;

h = the tank maximum height in m;

l = the tank maximum length in m;

k = dimentionless coefficient to be determined from the following table according to the ratio b/h. The intermediate values are determined by interpolation (linear or graphic).

(d) Small tanks, which satisfy the following condition using the value of k corresponding to the angle of inclination of 30°, need not be included in computation:

$$\frac{vbrk\ o}{\Delta_{mln}} < 0.01m$$

where:

Δ_{mln} = minimum ship displacement in tonnes (metric tonnes).

(d) The usual remainder of liquids in the empty tanks is not taken into account in computation.

TABLE 5

TABLE OF VALUES FOR COEFFICIENT "K" FOR CALCULATING FREE SURFACE CORRECTIONS

$k = \frac{\sin\theta}{12}\left(1 + \frac{\tan^2\theta}{2}\right) \times b/h$ where $\cot\theta > b/h$

$k = \frac{\cos\theta}{8}\left(1 + \frac{\tan\theta}{b/h}\right) - \frac{\cos\theta}{12(b/h)^2}\left(1 + \frac{\cot^2\theta}{2}\right)$ where $\cot\theta < b/h$

b/h	0	5°	10°	15°	20°	30°	40°	45°	50°	60°	70°	75°	80°	90°	0	b/h
20		0.11	0.12	0.12	0.12	0.11	0.10	0.09	0.09	0.07	0.05	0.04	0.03	0.01		20
10		0.07	0.11	0.12	0.12	0.11	0.10	0.10	0.09	0.07	0.05	0.04	0.03	0.01		10
5		0.04	0.07	0.10	0.11	0.11	0.11	0.10	0.10	0.08	0.07	0.06	0.05	0.03		5
3		0.02	0.04	0.07	0.09	0.11	0.11	0.11	0.10	0.09	0.08	0.07	0.06	0.04		3
2		0.01	0.03	0.04	0.06	0.09	0.11	0.11	0.11	0.10	0.09	0.09	0.08	0.06		2
1.5		0.01	0.02	0.03	0.05	0.07	0.10	0.11	0.11	0.11	0.11	0.10	0.10	0.08		1.5
1		0.01	0.01	0.02	0.03	0.05	0.07	0.09	0.10	0.12	0.13	0.13	0.13	0.13		1
0.75		0.01	0.01	0.02	0.02	0.04	0.05	0.07	0.08	0.12	0.15	0.16	0.16	0.17		0.75
0.5		0.00	0.01	0.01	0.02	0.02	0.04	0.04	0.05	0.09	0.16	0.18	0.21	0.25		0.5
0.3		0.00	0.00	0.01	0.01	0.01	0.02	0.03	0.03	0.05	0.11	0.19	0.27	0.42		0.3
0.2		0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.04	0.07	0.13	0.27	0.63		0.2
0.1		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.04	0.06	0.14	0.25		0.1

D—Effect of Timber Deck Cargo

17. In the case of ships carrying timber deck cargoes the buoyancy of such cargo may be taken into account, assuming the cargo to have a permeabililty of 25 per cent of its volume. Buoyancy of timber

PART III

STANDARD CONDITIONS OF LOADING TO BE EXAMINED

A—Loading Conditions

18. The following standard conditions of loading shall be examined with respect to passenger ships: Passenger's ship

(a) ship in the fully loaded departure condition with full stores and fuel and with the full number of passengers with their luggage;

(b) ship in the fully loaded arrival condition, with the full number of passengers and their luggage but with only 10 per cent stores and fuel remaining;

(c) ship without cargo, but with full stores and fuel and the full number of passengers and their luggage;

(d) ship in the same condition as at *(c)* above but with only 10 per cent stores and fuel remaining.

Cargo ships

19. The following standard conditions of loading shall be examined with respect to cargo ships:

(a) ship in the fully loaded departure condition, with cargo homogeneously distributed throughout all cargo spaces and with full stores and fuel;

(b) ship in the fully loaded arrival condition with cargo homogeneously distributed throughout all cargo spaces and with 10 per cent stores and fuel remaining;

(c) ship in ballast in the departure condition, without cargo, but with full stores and fuel;

(d) ship in ballast in the arrival condition, without cargo and with 10 per cent stores and fuel remaining.

Cargo ships with deck cargoes

20. In the case of cargo ships intending to carry deck cargoes, the following conditions shall be examined in addition to those in paragraph 19:

(a) ship in the fully loaded departure condition, with cargo homogeneously distributed in the holds and with cargo specified in extension and weight on deck, with fully stores and fuel;

(b) ship in the fully loaded arrival condition, with cargo homogeneously distributed in the holds and with cargo specified in extension and weight on deck, with 10 per cent stores and fuel.

B— Assumptions for calculating the loading conditions

Liquid cargo tanks

21. Where a dry cargo ship is also fitted with cargo tanks capable of carrying liquid cargoes, the fully loaded conditions referred to in paragraphs 19*(a)* and *(b)* and 20*(a)* and *(b)* shall be examined in accordance with each of the following two assumptions:

(a) that the cargo is homogeneously stowed excluding the liquid cargo tanks;

(b) that the cargo is homogeneously stowed including the liquid cargo tanks.

Appropriate load line for conditions

22. In the fully loaded departure conditions mentioned in 18*(a)*, 19*(a)* and 20*(a)* it should be assumed that the ship is loaded to her sub-division loadline, summer load line or, if the ship is marked with timber load lines, to the summer timber load line respectively, with water ballast tanks empty.

Carriage of ballast

23. Where in any loading condition it is necessary to carry water ballast, additional calculations are to be made taking into account the quantity and disposition of the water ballast.

Distribution of cargo

24. In all cases the cargo in holds is assumed to be fully homogeneous unless this condition is inconsistent with the practical service of the ship.

Deck cargoes

25. (1) In all cases in which deck cargoes are carried the weight of the deck cargo and its height should be clearly stated in the calculation.

(2) Where timber deck cargoes are carried the amount of cargo and ballast should correspond to the worst service condition in which all the relevant stability criteria in Part B of Part I of this Schedule are met. In the arrival condition it should be assumed that the weight of the timber deck cargo increased by 15 per cent due to water absorption.

(3) Where timber deck cargoes are carried and it is anticipated that some formation of ice will take place, an adequate allowance should be made in the arrival condition for the additional weight.

Passenger ship

26. (1) In calculating passenger weights and distribution the weight for each passenger should normally be taken as 75 kg and the height of a passenger's centre of gravity should be taken as 1.0 metre above the deck when standing and 0.30 metre above the seat occupied when sitting.

(2) When assessing compliance with the relevant criteria in Part B of Part I of this Schedule passengers and luggage should be considered to be in the spaces normally at their disposal.

(3) When assessing compliance with the criteria in paragraph 6—

(a) under normal circumstances, a passenger distribution value of 4 persons per square metre should be used;

(b) passengers without luggage should be considered as being distributed to produce the most unfavourable combination of passenger heeling moment or initial metacentric height which may be obtained in practice.

PART IV

STABILITY, LOADING AND BALLASTING INFORMATION TO BE PROVIDED ON BOARD SHIP FOR THE GUIDANCE OF THE MASTER

General

27. The information to be provided on board ship for the guidance of the master shall be in the form of a book of the form and content laid down in this Part of this Schedule.

Ship's main details

28. The ship's name, official number, port of registry, gross and register tonnages, principal dimensions, displacement, deadweight and draught to the Summer load line shall be specified.

Plans

29. A profile view and, if necessary, plan views of the ship, drawn to scale showing, with their names, all compartments, tanks, holds, storerooms and crew and passenger accommodation spaces and also showing the ship's mid-length position shall be provided.

Centres of gravity

30. (1) The capacity and the position of the centre of gravity, longitudinally and vertically, of every compartment available for the carriage of cargo, fuel stores, feed water, domestic water or water ballast shall be given.

(2) 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 centres of gravity of the vehicles and not on the volumetric centres of gravity of the compartments.

(3) The estimated total weight and the centre of gravity, longitudinally and vertically of—

(a) passengers and their effects; and

(b) crew and their effects,

shall be given.

(4) In assessing such centres 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.

Deck cargo weight and centres of gravity

31. (1) The estimated weight and the disposition and centre of gravity of the maximum amount of deck cargo which the ship may reasonably be expected to carry on an exposed deck shall be given.

(2) The estimated weight of the deck cargo referred to in subparagraph (1) shall include, in the case of deck cargoes suspectible to water absorption, an estimated weight of water likely to be so absorbed, which should be allowed for in arrival conditions.

(3) In the case of timber deck cargo the increase in weight due to water absorption shall be taken as 15 per cent of the weight of the cargo.

Load line diagrams

32. A diagram or scale shall be provided showing the load line mark and load lines with particular of the corresponding freeboards, and also showing the displacement, metric tonnes per centimetre immersion, and deadweight corresponding in each case to a range of mean draughts extending between the waterline representing the deepest load line and the waterline of the ship in light condition.

Hydrostatic particulars

33. (1) A diagram or tabular statement, shall be made available showing the hydrostatic particulars of the ship, including—

(a) the heights of the transverse and longitudinal metacentres above base line;

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

(c) the positions of the longitudinal centre of flotation;

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

(e) the values of the cross-sectional areas (Bonjean curves) and the waterplane 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.

(2) Where a tabular statement is used the intervals between such draughts shall be sufficiently close to permit accurate interpolation.

(3) In the case of ships having raked keels the datum line from which the heights of centres of buoyancy and metacentres are to be measured shall be the same data line used for the centres of gravity referred to in paragraphs 30 and 31.

Free surface

34. (1) Values of free surface moments for each tank in the ship in which liquids may be carried shall be provided, such moments being calculated in accordance with paragraph 16.

(2) An example showing how the metacentric height is to be corrected regarding free surface shall be given.

Cross curves of stability

35. (1) A diagram shall be provided showing cross curves of stability and indicating the height of the assumed axis from which the Righting Levers are measured, and the trim which has been assumed; in the case of ships having raked keels, where a datum other than top of keel has been used, the position of the assumed axis shall be clearly defined.

(2) In the case of a ship which may carry timber deck cargo, where the volume of such cargo, or a part thereof, has been taken into account in deriving a supplementary curve of stability appropriate to the ship when carrying such cargo, a diagram giving details of this supplementary curve should also be provided.

(3) Where the buoyancy of a superstructure or any other structure is taken into account in the calculation of stability information to be supplied to any ship, including vehicle ferries and similar vessels having bow doors, stern doors or ship's side doors—

(a) a suitable endorsement shall always be made on the cross curves of stability clearly indicating the extent of such inclusion;

(b) there shall be included in the stability information a specific statement that weathertight doors and any other special openings must be secured weathertight before the ship proceeds to sea and that the cross curves of stability are based upon the assumption that such doors and openings have been so secured;

(c) warning notices shall be conspicuously displayed near the weathertight doors and other special openings to the effect that such openings must be declared weathertight before the ship proceeds to sea on account of stability, particularly in the case of roll-on roll-off ferries having bow, stern, or side doors.

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

37. (1) The following shall be made available for use on board ship: Diagrams and statements

(a) profile diagrams of the ship drawn to a suitable small scale showing the disposition of all components to the deadweight;

(b) a statement showing the lightweight, the disposition and the total weights of all components of the deadweight, the displacement, the corresponding positions of the centre of gravity, the metacenter and also the metacentric height (GM); and

(c) a diagram showing a curve of Righting Levers (GZ) derived from the cross curves of stability referred to in paragraph 35; where credit is shown for the buoyancy of a timber deck cargo the curve of Righting Levers (GZ) must be drawn both with and without this credit.

38. (1) The diagram and statements referred to in paragraph 37 shall be provided separately for each for the following conditions of the ship: Loading conditions

(a) *Light condition*—where the ship has permanent ballast, such diagram and statements shall be provided for the ship in light condition both with and without such ballast;

(b) *Ballast condition*—both on departure and on arrival, it being assumed for the purpose of the latter in this and the following items that fuel, fresh water and other consumables are reduced to 10 per cent of their capacity;

(c) *Loaded condition*—both on departure, and on arrival, when loaded to the Summer load line with cargo filling all spaces available for cargo; cargo for this purpose being taken to be homogeneous cargo except 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;

(d) *Service loaded conditions*—both on departure and on arrival.

(2) The metacentric height and the curve of Righting Levers (GZ) shall be corrected for liquid free surface effect.

EIGHTH SCHEDULE

Freeboards for Existing Ships

PART I

1. In this Schedule, unless the context otherwise requires, the following expressions have the meanings hereby respectively assigned to them: Definitions

"amidships" means the middle of the length of the summer load waterline as defined in paragraph 26;

"conditions of assignment" means the conditions of assignment set out in Part II of this Schedule;

"flush deck ship" means a ship which has no superstructure on the freeboard deck;

"freeboard deck" means the uppermost complete deck having permanent means of closing all opening in weather portions of the deck in accordance with paragraphs 2 to 9, and in flush deck ships and ships with detached superstructures means the upper deck; in ships having discontinuous freeboard decks within superstructures which are not intact, or which are not fitted with Class I closing appliances, as defined in paragraph 37, the lowest line of the deck below the superstructure deck shall be deemed to be the freeboard deck;

"sailing ship" includes all ships provided with sufficient sail area for navigation under sails alone, whether or not fitted with mechanical means of propulsion;

"special steamer freeboard" means a freeboard assigned under Part VII of this Schedule;

"steamer" includes all ships having sufficient means for mechanical propulsion, except where provided with sufficient sail area for navigation under sails alone, and for the purposes of this Schedule a lighter, barge or other ship without independent means of propulsion, when towed, is deemed to be a steamer;

"superstructure" means a deck structure on the freeboard deck extending from side to side of the ship, and includes a raised quarter deck;

"superstructure deck" means the deck forming the top of the superstructure;

"tanker" includes all steamers specially constructed for the carriage of liquid cargoes in bulk;

"timber deck cargo" means a cargo of timber carried on an uncovered part of a freeboard or superstructure deck, but does not include a cargo of wood pulp or similar substance;

"timber freeboard" means a freeboard assigned under Part V of this Schedule.

PART II

CONDITIONS OF ASSIGNMENT

A— Openings in Freeboard and Superstructure Decks

Hatchways not protected by superstructures

2. The construction and fitting of cargo and other hatchways in exposed positions on freeboard and superstructure decks shall be at least equivalent to the standards laid down in paragraphs 3 to 9.

Hatchways coamings

3. (1) The height of hatchway coamings on freeboard decks shall be at least 24 inches above the deck.

(2) The height of coamings on superstructure decks shall be at least 24 inches above the deck if situated within a quarter of the ship's length from the stem, and at least 18 inches if situated elsewhere.

(3) Coamings shall—

(a) be made of steel;

(b) be substantially constructed; and

(c) where required to be 24 inches high, be fitted with an efficient horizontal stiffener placed not lower than 10 inches below the upper edge, and with efficient brackets or stays from the stiffener to the deck, at intervals of not more than 10 feet.

Hatchway covers

4. (1) Covers to exposed hatchways shall be efficient, and where they are made of wood, the finished thickness shall be at least 2 3/8 inches in association with a span of not more than 5 feet.

(2) The width of each bearing surface for wood hatchway covers shall be at least 2 1/2 inches.

(3) The ends of the wood covers shall be protected by galvanized steel bands efficiently secured.

Hatchway beams and fore-and-afters

5. (1) Where wood hatchway covers are fitted the hatchway beams are fore-and-afters shall be of the scantlings and spacing given in Table 1 in subparagraph (4) where coamings 24 inches high are required, and as given in Table 2 in subparagraph (5) where coamings 18 inches high are required.

(2) Angle bar mountings on the upper edge shall extend continuously for the full length of each beam.

(3) Wood fore-and-afters shall be steel shod at all bearing surfaces.

(4) Table 1 referred to in subparagragh (1) is—

TABLE 1

(Coamings 24 inches in height)

HATCHWAY BEAMS AND FORE-AND-AFTERS FOR SHIPS 200 FEET OR MORE IN LENGTH*

Hatchway Beams

Breadth of Hatchway	Mounting	Beams with Fore-and-Afters			Beams without Fore-and-Afters	
		Spacing Centre to Centre			Spacing Centre to Centre	
		6' 0"	8' 0"	10' 0"	4' 0"	5' 0"
	Ins. Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.
10' 0"	3 x 3 x .40A	11 x .30P	12 x .32P	14 x .34P	9 x .46BP	10 x .50BP
12' 0"	3 x 3 x .40A	12 x .32P	14 x .34P	17 x .36P	11 x .50BP	12 x .50BP
14' 0"	3 x 3 x .42A	14 x .34P	17 x .36P	20 x .38P	12 x .50BP	12 x .32P
16' 0"	3½ x 3 x .42A	16 x .36P	19 x .38P	22 x .38P	12 x .32P	14 x .34P
18' 0"	4 x 3 x .44A	18 x .36P	21 x .38P	25 x .40P	14 x .34P	16 x .36P
20' 0"	4 x 3 x .44A	20 x .38P	24 x .40P	28 x .42P	15 x .34P	18 x .36P
22' 0"	4½ x 3 x .46A	22 x .38P	26 x .42P	30 x .44P	16 x .36P	19 x .36P
24' 0"	5 x 3½ x .46A	23 x .40P	28 x .42P	32 x .44P	17 x .36P	20 x .38P
26' 0"	5½ x 3½ x .48A	24 x .40P	29 x .42P	34 x .46P	18 x .36P	21 x .38P
28' 0"	6 x 3½ x .50A	25 x .40P	31 x .44P	36 x .48P	19 x .38P	22 x .38P
30' 0"	6 x 3½ x .52A	26 x .42P	32 x .44P	38 x .48P	20 x .38P	23 x .40P

Fore-and-Afters

Length of Fore-and-Afters	Mounting	Bulb Plate Centre Fore-and-Afters			Bulb Angle Side Fore-and-Afters		
		Spacing Centre to Centre			Spacing Centre to Centre		
		3' 0"	4' 0"	5' 0"	3' 0"	4' 0"	5' 0"
	Ins. Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins. Ins.	Ins. Ins. Ins.	Ins. Ins. Ins.
6' 0"	2½ x 2½ x .36	6 x .36	6½ x .38	7 x .38	6 x 3 x .36	6½ x 3½ x .38	7 x 3½ x .38
8' 0"	2½ x 2½ x .38	7 x .42	8 x .44	9 x .44	7 x 3½ x .42	8 x 3 x .44	9 x 3½ x .44
10' 0"	2½ x 2½ x .40	8 x .50	9½ x .50	11 x .50	8 x 3½ x .50	9½ x 3½ x .50	11 x 3½ x .50

	Wood Centre Fore-and-Afters						Wood Side Fore-and-Afters					
	Spacing Centre to Centre						Spacing Centre to Centre					
	3' 0"		4' 0"		5' 0"		3' 0"		4' 0"		5' 0"	
	D	B	D	B	D	B	D	B	D	B	D	B
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
6' 0"	5½	7	6	7	6½	7	5½	5½	6	6	6½	6
8' 0"	6½	7	7½	7	8	7	6½	6½	7½	7	8	7
10' 0"	8	7	8½	8	9	9	8	7	8½	8	9	9

A — Plain angle. BP — Bulb plate. P — Plate. D — Depth. B — Breadth.

Depths for hatchway beams are at the middle of the length and are measured from the top mounting to the lower edge. Depths for fore-and-afters are measured from the under side of the hatch covers to the lower edge. Sizes for intermediate lengths and spacing are obtained by interpolation. Where plates are specified, two angles, of the size given for mountings, are to be fitted at the upper and at the lower part of the beam. Where bulb plates are specified, two angles, of the size given for mountings, are to be fitted at the upper part of the beam or fore-and-after. Where bulb angles are specified, one angle, of the size given for mountings, is to be fitted at the upper part of the section. Where the specified flanges of an angle are of different dimensions, the larger flange is to be horizontal.

* In ships not exceeding 100 feet in length, the depths of beams which are formed of plates and angles may be 60 per cent of the depths given above; the depths of beams and steel fore-and-afters formed of bulb angle or bulb plate section may be 80 per cent of the depths given above; the thickness of plates, bulb angles and bulb plates should correspond to the thickness tabulated for the reduced depths with a minimum thickness of .30 inch; the depths and breadths of wood fore-and-afters may be 80 per cent of those given in the tables for side fore-and-afters, but the centre fore-and-after must be not less than 6½ inches wide. In ships between 100 feet and 200 feet in length, the sizes of the beams and fore-and-afters are to be determined by linear interpolation.

(5) Table 2 referred to in subparagragh (1) is—

TABLE 2

(Coamings 18 inches in height)

HATCHWAY BEAMS AND FORE-AND-AFTERS FOR SHIPS 200 FEET OR MORE IN LENGTH*

Hatchway Beams

Breadth of Hatchway	Mounting	Beams with Fore-and-Afters			Beams without Fore-and-Afters	
		Spacing Centre to Centre			Spacing Centre to Centre	
		6' 0"	8' 0"	10' 0"	4' 0"	5' 0"
	Ins. Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.
10' 0"	3 x 3 x .40A	9½ x .46BP	10½ x .50BP	11½ x .52BP	8 x .40BP	9 x .44BP
12' 0"	3 x 3 x .40A	11 x .50BP	11 x .30P	13 x .34P	9 x .44BP	10 x .50BP
14' 0"	3 x 3 x .42A	11 x .30P	13 x .32P	15 x .34P	10 x .50BP	11½ x .50BP
16' 0"	3½ x 3 x .42A	12 x .32P	15 x .34P	17 x .36P	11 x .30P	11 x .30P
18' 0"	4 x 3 x .44A	14 x .34P	17 x .36P	19 x .38P	11 x .30P	12 x .32P
20' 0"	4 x 3 x .44A	16 x .36P	19 x .38P	21 x .38P	12 x .32P	13 x .34P
22' 0"	4½ x 3 x .46A	17 x .36P	20 x .38P	23 x .40P	12½ x .32P	14 x .34P
24' 0"	5 x 3½ x .46A	18 x .36P	21 x .38P	25 x .40P	13 x .34P	14½ x .34P
26' 0"	5½ x 3½ x .48A	19 x .38P	22 x .38P	26 x .42P	13½ x .34P	15 x .34P
28' 0"	6 x 3½ x .50A	20 x .38P	23 x .40P	27 x .42P	14 x .34P	16 x .36P
30' 0"	6 x 3½ x .52A	21 x .38P	24 x .40P	28 x .42P	15 x .34P	17 x .36P

Fore-and-Afters

Length of Fore-and-Afters	Mounting	Bulb Plate Centre Fore-and-Afters			Bulb Angle Side Fore-and-Afters		
		Spacing Centre to Centre			Spacing Centre to Centre		
		3' 0"	4' 0"	5' 0"	3' 0"	4' 0"	5' 0"
	Ins. Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins.	Ins. Ins. Ins.	Ins. Ins. Ins.	Ins. Ins. Ins.
6' 0"	2½ x 2½ x .36	5 x .34	5½ x .34	6 x .36	5 x 3 x .34	5½ x 3 x .34	6 x 3 x .36
8' 0"	2½ x 2½ x .38	6 x .38	7 x .40	7½ x .42	6 x 3 x .38	7 x 3 x .40	7½ x 3½ x .42
10' 0"	2½ x 2½ x .40	7 x .44	8 x .46	9 x .50	7 x 3 x .44	8 x 3½ x .46	9 x 3½ x .50

	Wood Centre Fore-and-Afters						Wood Side Fore-and-Afters					
	Spacing Centre to Centre						Spacing Centre to Centre					
	3' 0"		4' 0"		5' 0"		3' 0"		4' 0"		5' 0"	
	D	B	D	B	D	B	D	B	D	B	D	B
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
6' 0"	5	7	5½	7	6	7	5	5	5½	5	6	5
8' 0"	6	7	6½	7	7	7	6	5	6½	6	7	6
10' 0"	7	7	7½	7	8	7	7	6	7½	7	8	7

A — Plain angle. BP — Bulb plate. P — Plate. D — Depth. B — Breadth.

Depths for hatchway beams are at the middle of the length and are measured from the top mounting to the lower edge. Depths for fore-and-afters are measured from the under side of the hatch covers to the lower edge. Sizes for intermediate lengths and spacing are obtained by interpolation. Where plates are specified, two angles, of the size given for mountings, are to be fitted at the upper and at the lower part of the beam. Where bulb plates are specified, two angles, of the size given for mountings, are to be fitted at the upper part of the beam or fore-and-after. Where bulb angles are specified, one angle, of the size given for mountings, is to be fitted at the upper part of the section. Where the specified flanges of an angle are of different dimensions, the larger flange is to be horizontal.

*In ships not exceeding 100 feet in length, the depths of beams which are formed of plates and angles may be 60 per cent of the depths given above; the depths of beams and steel fore-and-afters formed of bulb angle or bulb plate section may be 80 per cent of the depths given above; the thickness of plates, bulb angles and bulb plates should correspond to the thickness tabulated for the reduced depths with a minimum thickness of .30 inch; the depths and breadths of wood fore-and-afters may be 80 per cent of those given in the tables for side fore-and-afters, but the centre fore-and-afters must be not less than 6½ inches wide. In ships between 100 feet and 200 feet in length, the sizes of the beams and fore-and-afters are to be determined by linear interpolation.

Carriers or sockets

6. Carriers or sockets for hatchway beams and fore-and-afters shall be of steel at least 1/2 inch thick, and shall have a width of bearing surface of at least 3 inches.

Cleats

7. (1) Strong cleats at least 2 1/2 inches wide, shall be fitted at intervals of not more than 2 feet from centre to centre; the end cleats shall be placed not more than 6 inches from each corner of the hatchway.

(2) Cleats shall be of a pattern approved by the Assigning Authority and shall be set to fit the taper of the wedges.

Battens, wedges and tarpaulins

8. (1) Battens and wedges shall be efficient and in good condition.

(2) Wedges shall be made from tough wood cut to a taper of 1 in 6 and shall be not less than 1/2 inch thick at the toe.

(3) At least two tarpaulins in good condition, thoroughly water-proofed and of ample strength, shall be provided for each hatchway in an exposed position on freeboard and superstructure decks.

(4) The material of the tarpaulins shall be guaranteed free from jute, and the minimum weight of the material, before treatment, shall be 19ozs. per square yard if to be tarred, 18 ozs. per square yard if to be chemically dressed or 16 ozs. per square yard for black oil dressing.

Security of hatchway covers

9. (1) Where the coamings are required to be 24 inches high, steel bars or other equilavent means shall be provided for efficiently and independently securing each section of hatchway covers after the tarpaulins are battened down.

(2) At all other hatchways in exposed positions on freeboard and superstructure decks, ring bolts or other fittings for lashings shall be provided.

(3) Where the hatchway covers extend over intermediate supports, steel bars or their equivalent shall be fitted at each end of each section of the covers.

Hatchways, coamings and closing arrangements within superstructures

10. (1) Cargo, coamings and other hatchways in the freeboard deck within superstructures which are fitted with closing appliances less efficient than Class 1 but not less efficient than Class 2 shall have coamings at least 9 inches in height and closing arrangements as effective as those required for exposed cargo hatchways whose coamings are 18 inches high.

(2) Where the closing appliances are less efficient than Class 2, the hatchways shall have coamings at least 18 inches in height, and shall have fittings and closing arrangements as effective as those required for exposed cargo hatchways.

Machinery space opening on freeboard and raised quarter decks

11. (1) Machinery space openings in exposed positions on freeboard and raised quarter decks shall be properly framed and efficiently enclosed by steel casings of ample strength.

(2) The doors in casings referred to in subparagraph (1) shall be of steel, efficiently stiffened, permanently attached, and capable of being closed and secured from both sides.

(3) The sills of openings shall be at least 24 inches above the freeboard deck and at least 18 inches above the raised quarter deck.

(4) Fiddley, funnel and ventilator coamings shall be as high above the deck as is reasonable and practicable.

(5) Fiddley openings shall have strong covers permanently attached in their proper positions.

Machinery space openings on superstructure decks other than raised quarter decks

12. (1) Machinery space openings in exposed positions on superstructure desk other than raised quarter decks shall be properly framed and efficiently enclosed by strong steel casings.

(2) The doors in such casings shall be strongly constructed, permanently attached, and capable of being closed and secured from both sides.

(3) The sills of the openings shall be at least 15 inches above superstructure decks.

(4) Fiddley, funnel and ventilator coamings shall be as high above the deck as is reasonable and practicable.

(5) Fiddley openings shall have strong steel covers permanently attached in their proper positions.

Machinery space openings within superstructure

13. (1) Machinery space openings in the freeboard deck within superstructures which are fitted with closing appliances less efficient than Class 1 shall be properly framed and efficiently enclosed by steel casings.

(2) the doors in such casings shall be strongly constructed, permanently attached and capable of being securely closed.

(3) The sills of the openings shall be at least 9 inches above the deck where the superstructures are closed by Class 2 closing appliances, and at least 15 inches above the deck where the closing appliances are less efficient than Class 2.

Flush bunker scuttles

14. (1) Flush bunker scuttles may only be fitted in superstructure decks, except in the case of small ships in special trades when they may be fitted in other positions by permission of the Assigning Authority.

(2) Such scuttles shall be of iron or steel, of substantial construction, with screw or bayonet joints; where a scuttle is not secured by hinges, a permanent chain attachment shall be provided.

Companion-ways

15. (1) Companionways in exposed positions on freeboard decks and on desk of enclosed superstructures shall be of substantial construction.

(2) The sills of the doorways shall be of the heights specified for hatchway coamings in paragraphs 3 and 10.

(3) The doors shall be strongly constructed and capable of being closed and secured from both sides.

(4) Where the campanionway is situated within a quarter of the ship's length from the stem, it shall be of steel and riveted to the deck plating.

Ventilators

16. (1) Ventilators in exposed positions on freeboard and superstructure decks to space below freeboard decks or decks of superstructures which are intact or fitted with Class 1 closing appliances shall have coamings of steel, substantially constructed, and efficiently connected to the deck by rivets spaced four diameters apart centre to centre, or by equally effective means.

(2) The deck plating at the base of the coaming shall be efficiently stiffened between the deck beams.

(3) The ventilator openings shall be provided with efficient closing arrangement.

(4) Where such ventilators are situated on the freeboard deck, or on the superstructure deck within a quarter of the ship's length from the stem, and the closing arrangements of the ventilators are of a temporary character, the coamings shall be at least 36 inches in height; in other exposed positions on the superstructure deck they are to be at least 30 inches in height.

(5) Where the coaming of any ventilator exceeds 36 inches in height it shall be specially supported and secured.

17. (1) Where the air pipes to ballast and other tanks extend above freeboard or superstructure decks, the exposed parts of the pipes shall be of substantial construction. Air pipes

(2) The height from the deck to the opening shall be at least 36 inches in wells on freeboard decks, 30 inches on raised quarter decks, and 18 inches on other superstructure decks.

(3) Efficient means shall be provided for closing the openings of the air pipes.

B—Openings in the sides of ships

18. Openings in the sides of ships below the freeboard deck shall be fitted with watertight doors or covers which, with their securing appliances, shall be of sufficient strength. Gangway, cargo, coaling ports, etc.

19. (1) Discharges led through the ship's sides from spaces below the freeboard deck shall be fitted with efficient and accessible means for preventing water from passing inboard. Scuppers and sanitary discharge pipes

(2) Each separate discharge shall have either an automatic non-return valve with a positive means of closing it from a position above the freeboard deck, or two automatic non-return valves without positive means of closing, provided the upper valve is situated so that it is always accessible for examination under service conditions.

(3) The positive action valve shall be readily accessible and is to be provided with means for showing whether the valve is opened or closed.

(4) Subparagraphs (1) to (3) shall apply to discharges from spaces within enclosed superstructures if, and to the extent that, the Assigning Authority consider necessary having regard to the type and location of the inboard ends of each openings.

(5) Where scuppers are fitted in superstructures not fitted with Class 1 closing appliances they shall have efficient means for preventing the accidental admission of water below the freeboard deck.

(6) Cast iron shall not be accepted for valve and discharges led through the ship's sides below the freeboard deck or through the sides of enclosed superstructures.

20. (1) Side scuttles to spaces below the freeboard deck, or to spaces below the superstructure deck of superstructures closed by Class 1 or Class 2 closing appliances, shall be fitted with efficient inside deadlights permanently attached in their proper positions so that they can be effectively closed and secured watertight. Side scuttles

(2) Where, however, such spaces in superstructures are appropriated to passengers, other than steerage passengers, or to crew, the side scuttles may have portable deadlights stowed adjacent to the side scuttles, provided they are readily accessible at all times in service.

(3) The side scuttles and deadlight shall be of substantial construction and of types approved by the Minister.

C—Miscellaneous Provisions

21. Efficient guard rails or bulwarks shall be fitted on all exposed portions of freeboard and superstructure decks. Guard rails

22. (1) Where bulwarks on the weather portions of freeboard or superstructure decks form "wells", ample provision shall be made for rapidly freeing the decks of water and for draining them. Freeing ports

(2) The minimum freeing port area on each side of the ship for each "well" on freeboard decks and on raised quarter decks shall be that given by the scale given in subparagraph (6).

(3) The minimum area for each well on any superstructure deck other than a raised quarter deck shall be one-half the area given by that scale.

(4) Where the length of the well exceeds seven-tenths of the length of the ship as defined in paragraph 26, the Assigning Authority may modify that scale.

(5) In ships with less than the standard sheer the freeing port area shall be increased as required by the Assigning Authority.

(6) The scale referred to in subparagraph (3) and (4) is—

SCALE OF FREEING PORT AREA

Length of Bulwarks in "Well" in Feet	Freeing Port Area on each side in Square Feet
15	8.0
20	8.5
25	9.0
30	9.5
35	10.0
40	10.5
45	11.0
50	11.5
55	12.0
60	12.5
65	13.0
Above 65	1 square foot for each additional 5 feet length of bulwarks.

(7) The lower edges of the freeing ports shall be as near the deck as practicable and as a general rule shall not be higher than the upper edge of the gunwale bar.

(8) Two-thirds of the freeing port area required shall be provided in the midship half of the well.

(9) All openings in the bulwarks shall be protected by rails or bars spaced about 9 inches apart.

(10) Where shutters are fitted to freeing ports, ample clearance shall be provided to prevent jamming and hinges shall have brass pins.

Protection of crew

23. (1) Gangways, lifelines or other satisfactory means shall be provided for the protection of the crew in getting to and from their quarters.

(2) The strength of houses for the accommodation of crew on flush deck steamers shall be equivalent to that requirement for superstructure bulkheads.

Special provision for exceptional ships

24. Notwithstanding anything in paragraphs 2 to 23 the Assigning Authority may, in any exceptional case, allow departures from the said provisions on condition that the freeboards computed for the ship are increased to such extent as will, in the opinion of the Minister, ensure that the protection afforded to the ship and crew is not less effective than it would be if the ship fully complied with paragraphs 2 to 23 and there had been no increase of freeboards.

PART III

COMPUTATION OF FREEBOARDS FOR STEAMERS

A—General

Freeboards for steamers

25. Subject to paragraph 24 the freeboards for steamers, other than tankers or steamers of special type to which freeboards are assigned under Parts VI and VII shall be computed in accordance with this Part.

Length

26. (1) The length (L) to be used with this Schedule is the length in feet on the summer load water-line from the foreside of the stem to the after side of the rudder post.

(2) Where there is no rudder post, the length is measured from the foreside of the stem to the axis of the rudder stock.

(3) For ships with cruiser sterns, the length shall be taken as 96 per cent of the total length on the designed summer load water-line or as the length from the foreside of the stem to the axis of the rudder stock if that is greater.

Breadth

27. The breadth (B) to be used with this Schedule is the maximum breadth in feet amidships to the moulded line of the frame in iron or steel ships, and to the outside of the planking in wood or composite ships.

Moulded depth

28. (1) The moulded depth is the vertical distance in feet, measured amidships, from the top of the keel to the top of the freeboard deck beam at side.

(2) In wood and composite ships the vertical distance referred to in subparagraph (1) is measured from the lower edge of the keel rabbet.

(3) Where the form at the lower part of the midship section is of a hollow character, or where thick garboards are fitted, the depth is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

Depth for freeboard

29. (1) The depth (D) to be used with this Schedule is the moulded depth plus the thickness of stringer plate, or plus $\frac{T\ (L-S)}{L}$ if that is greater, where—

(a) T is the mean thicknes of the exposed deck clear of deck openings; and

(b) S is the total length of superstructures as defined in paragraph 34.

(2) Where the topsides are of unusual form, D is the depth of a midship section having vertical topsides, standards round of beam and area of topside section equal to that in the actual midship section.

(3) Where there is a step or break in the topsides (e.g., as in the Turret Deck ship) 70 per cent of the area above the step or break is included in the area used to determine the equivalent section.

(4) In a ship without an enclosed superstructure covering at least 0.6 L amidships, without a complete trunk or without a combination of intact partial superstructures and trunk extending all fore and aft, where D is less than $\frac{L}{15}$, the depth used with the table set out in paragraph 62 shall not be taken as less than $\frac{L}{15}$.

Coefficient of fineness

30. (1) The coefficient of fineness (c) to be used with this Schedule is given by the formula—

$$c = \frac{35\ \Delta}{L.B.d_1}$$

where Δ is the ship's moulded displacement in tons (excluding bossing) at a mean moulded draught d_1 which is 85 per cent of the moulded depth.

(2) The coefficient (c) shall not be taken as less than 0.68.

B—Scantlings

Strength of ship

31. (1) The Assigning Authority shall be satisfied with the structural strength of any ship before assigning to it a freeboard.

(2) Ships which comply with the highest standard of rules of a Classification Society recognised for this purpose by the Minister shall be regarded as having sufficient strength for the minimum freeboards allowed under this Schedule.

(3) Ships which do not comply with the highest standard of the rules of a Classification Society recognised as aforesaid shall be assigned such increased freeboards as shall be determined by the Assigning Authority, having regard to the extent to which the ship complies with the following strength moduli—

(a) material:

(i) the strength moduli are based on the assumption that the structure is built of mild steel, manufactured by the open hearth process (acid or basic), and having a tensile strength of 26 to 32 tons per square inch, and an elongation of at least 16 per cent on a length of 8 inches;

(ii) Strength Deck—The strength deck is the uppermost deck which is incorporated into and forms an integral part of the longitudinal girder within the half-length amidships;

(iii) Depth to Strength Deck (Ds)—The depth to strength deck is the vertical distance in feet amidships from the top of the keel to the top of the strength deck beam at side;

(iv) Draught (d)—The draught is the vertical distance in feet amidships from the top of the keel to the centre of the load line disc;

(b) longitudinal modulus:

(i) the longitudinal modulus $\frac{I}{y}$ is the moment of inertia I of the midship section about the neutral axis divided by the distance y measured from the central axis to the top of the strength deck beam at side, calculated in way of openings but without deductions for rivet holes; areas are measured in square inches and distances in feet;

(ii) below the strength deck, all continuous longitudinal members other than such parts of the under deck girders as are required entirely for supporting purposes, are included; above the strength deck, the gunwale angle bar and the extension of the sheerstrake are the only members included;

(iii) the required longitudinal modulus for effective material is expressed by the formula f (d) (B), where f is the factor obtained from the following table:

L.	f.	L.	f.
100	1.80	360	9.40
120	2.00	380	10.30
140	2.35	400	11.20
160	2.70	420	12.15
180	3.15	440	13.10
200	3.60	460	14.15
220	4.20	480	15.15
240	4.80	500	16.25
260	5.45	520	17.35
280	6.20	540	18.45
300	6.95	560	19.60
320	7.70	580	20.80
340	8.55	600	22.00

(iv) for intermediate lengths, the value of f is determined by interpolation;

(v) this formula applies where L does not exceed 600 feet, B is between $\frac{L}{10}$ + 5 and $\frac{L}{10}$ + 20, both inclusive, and $\frac{L}{D}$ is between 10 and 13.5, both inclusive;

(c) Frame modulu;

(i) for the purpose of the frame modulus, the frame is regarded as composed of a frame angle and a reverse angle each of the same size and thickness;

(ii) The modulus $\frac{I}{Y}$ of the midship frame below the lowest tier of beams is the moment of inertia I of the frame section about the neutral axis divided by the distance y measured from the neutral axis to the extremity of the frame section, calculated without deduction for rivet and bolt holes; the modulus is measured in inch units;

(iii) the required frame modulus is expressed by the formula:

$$\frac{s\ (d-t)\ (f_1+f_2)}{1{,}000}$$

where—

s is the frame spacing in inches; t is the vertical distance in feet measured at amidships from the top of the keel to a point midway between the top of the inner bottom at side and top of the heel bracket in accordance with figure 1 in sub-item (vii); where there is no double bottom, t is measured to a point midway between the top of the floor at centre and the top of the floor at side;

f_1 is a coefficient depending on H, which, in ships fitted with double bottoms, is the vertical distance in feet from the middle of the beam bracket of the lowest tier of beams at side to a point midway between the top of the inner bottom at side and the top of the heel bracket in accordance with figure 1 of sub-item (vii) where there is no double bottom, H is measured to a point midway between the top of the floor at centre and the top of the floor at side; where the frame obtains additional strength from the form of the ship, due allowance is made in the value of f_1;

f_2 is a coefficient depending on K, which is the vertical distance in feet from the top of the lowest tier of beams at side to a point 7 feet 6 inches above the freeboard deck at side, or, if there is a superstructure, to a point 12 feet 6 inches above the freeboard deck at side in accordance with figure 1 of sub-item (vii);

H in feet	0	7	9	11	13	15	17	19	21	23	25
f_1	9	11	12.5	15	19	24	29.5	36	43	51	59

K in feet	0	5	10	15	20	25	30	35	40
f_2	0	0.5	1.0	2.0	3.0	4.5	6.5	9.0	12.0

(iv) the values of f_1 and f_2 are obtained from the following tables and intermediate values are obtained by interpolation;

(v) this formula applies where d is between 15 feet and 60 feet, both inclusive, B is between $\frac{L}{10} + 5$ and $\frac{L}{10} + 20$, both inclusive, $\frac{L}{D_S}$ is between 10 and 13.5, both inclusive, and the horizontal distance from the outside of the frame to the centre of the first row of pillars does not exceed 20 feet;

(vi) in single deck ships of ordinary form, where H does not exceed 18 feet, the frame modulus determined by the preceding method is multiplied by the factor f_3 where—

$f_3 = .50 + .05 (H - 8)$;

(vii) where the horizontal distance from the outside of the frame to the centre of the first row of pillars exceeds 20 feet, sufficient additional strength shall be provided to the satisfaction of the Assigning Authority.

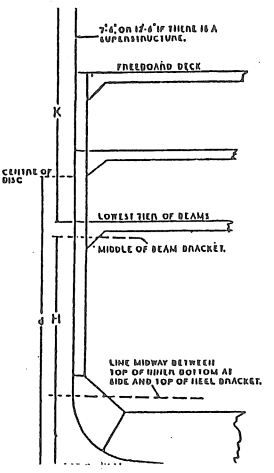


figure 1

TABLE OF SCANTLINGS

Exposed Bulkheads of Superstructures of Standard Height

Bridge Front Bulkheads Unprotected Bulkheads of Poops .4 L or more in Length		Bulkheads of Poops Partially Protected or less in Length than .4 L		After Bulkheads of Bridges and Forecastles	
Length of Ship	Bulb Angle Stiffeners	Length of Ship	Plain Angle Stiffeners	Length of Ship	Plain Angle Stiffeners
Feet	Inches	Feet	Inches	Feet	Inches
Under 160	5 1/2 x 3 x .30	Under 150	3 x 2 1/2 x .30	Under 150	2 1/2 x 2 1/2 x .26
160	6 x 3 x .32	150	3 1/2 x 2 1/2 x .32	150	3 x 2 1/2 x .28
200	6 1/2 x 3 x .34	200	4 x 3 x .34	250	3 1/2 x 3 x .30
240	7 x 3 x .36	250	4 1/2 x 3 x .36	350	4 x 3 x .32
280	7 1/2 x 3 x .38	300	5 x 3 x .38		
320	8 x 3 x .40	350	5 1/2 x 3 x .42		
360	8 1/2 x 3 x .42	400	6 x 3 x .44		
400	9 x 3 x .44	450	6 1/2 x 3 1/2 x .46		
440	9 1/2 x 3 1/2 x .46	500	7 x 3 1/2 x .48		
480	10 x 3 1/2 x .48	550	7 x 3 1/2 x .50		
520	10 1/2 x 3 1/2 x .50				
560	11 x 3 1/2 x .52				

Length of Ship	Bulkhead Plating	Length of Ship	Bulkhead Plating	Length of Ship	Bulkhead Plating
Feet	Inch	Feet	Inch	Feet	Inch
200 and under 380	.3	160 and under 400	.24	160 and under 400	.20
and above	.44	and above	.38	and above	.30

For ships intermediate in length the thickness of bulkhead plating are obtained by interpolation.

C—Superstructures

32. The height of a superstructure is the least vertical height measured from the top of the superstructure deck to the top of the freeboard deck beams minus the difference between D and the moulded depth as described in paragraphs 28 and 29. Height of superstructure

33. (1) The standard height of a raised quarter deck is 3 feet for ships up to an including 100 feet in length, 4 feet for ships 250 feet in length and 6 feet for ships 400 feet in length and more. Standard height of superstructure or of a trunk

(2) The standard height of any other superstructure or of a trunk is 6 feet for ships up to and including 250 feet in length and 7 feet 6 inches for ships 400 feet in length and more.

(3) The standard height at intermediate lengths is obtained by interpolation.

34. The length of a superstructure (S) is the mean covered length of the parts of the superstructure which extend to the sides of the ship and lie within lines drawn perpendicular to the extremities of the summer load waterline, as described in paragraph 26. Length of superstructures

Enclosed superstructure

35. A detached superstructure is regarded as enclosed only where—

(a) the enclosing bulkheads are of efficient construction as required by paragraph 36;

(b) the access openings in these bulkheads are fitted with Class 1 or Class 2 closing appliances, as described in paragraphs 37 and 38;

(c) all other openings in sides or ends of the superstructure are fitted with efficient weathertight means of closing; and

(d) independent means of access to crew, machinery, bunker and other working spaces within bridges and poops are at all times available when the bulkhead openings are closed.

Superstructure bulkheads

36. Bulkheads at exposed ends of poops, bridges and forecastles are deemed to be of efficient construction where the Assigning Authority are satisfied that, in the circumstances, they are equivalent to the following standard for ships with minimum freeboards, under which standard the stiffeners and plating are of the scantlings given in the following Table, the stiffeners are spaced 30 inches apart, the stiffeners on poop and bridge front bulkheads have efficient end connections, and those on after bulkheads of bridges and forecastles extend for the whole distance between the margin angles of the bulkheads.

D—Appliances for closing access opening in bulkheads at ends of detached superstructures

Class 1 closing appliances

37. Class 1 closing appliances shall be closing appliances which comply with the following conditions:

(a) they shall be constructed of iron or steel;

(b) they shall in all cases be permanently and strongly attached to the bulkhead;

(c) they shall be framed, stiffened and fitted so that the whole structure is of equivalent strength to the unpierced bulkhead;

(d) they shall be weathertight when closed;

(e) the means for securing these appliances shall be permanently attached to the bulkhead or to the appliances and the latter shall be so arranged that they can be closed and secured from both sides of the bulkhead or from the deck above; and

(f) the sills of the access openings shall be at least 15 inches above the deck.

Class 2 closing appliances

38. The following closing appliances shall be Class 2 closing appliances:

(a) strongly framed hard wood hinged doors, which are not more than 30 inches wide or less than 2 inches thick;

(b) shifting boards fitted for the full height of the opening in channels rivetted to the bulkheads, the shifting boards being at least 2 inches thick where the width of opening is 30 inches or less, and increased in thickness at the rate of 1 inch for each additional 15 inches of width; or

(c) portable plates of equal efficiency with the appliances specified in *(a)* or *(b)*.

E—Temporary appliances for closing openings in superstructure decks

Temporary closing appliances

39. Temporary closing appliances for middle line openings in the deck of an enclosed superstructure shall be regarded as efficient if they consist of—

(a) a steel coaming not less than 9 inches in height efficiently rivetted to the deck;

(b) hatchway covers as required by paragraph 4, secured by hemp lashings; and

(c) hatchway supports as required by paragraph 5 and 6 and Table 1 or 2 in paragraph 5.

F—Effective length of detached superstructures

Determining effective length

40. For the purpose of determining the effective length of detached superstructures paragraphs 41 to 46 shall apply.

General

41. (1) Where exposed bulkheads at the end of poops, bridges and forecastles are not of efficient construction in accordance with paragraph 36 they shall be treated as non-existent.

(2) Where in the side plating of a superstructure there is an opening not provided with permanent means of closing, the part of the superstructure in way of the opening shall be regarded as having no effective length.

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

Poop

42. (1) Where there is an efficient bulkhead and the access openings are fitted with Class 1 closing appliances, the length of the poop to the bulkhead shall be the effective length.

(2) Where the access openings in an efficient bulkhead are fitted with Class 2 closing appliances and the length of the poop to the bulkhead is 5 L or less, 100 per cent of that length shall be the effective length; where the length is 0.7 L or more, 90 per cent of that length shall be the effective length; where the length is between 0.5 L and 0.7 L an intermediate percentage of that length shall be the effective length; but where in any of these cases an allowance is given for an efficient adjacent trunk in accordance with paragraph 46 only 90 per cent of the length to the bulkhead shall be the effective length.

(3) 50 per cent of the length of an open poop or of an open extension of a poop beyond an efficient bulkhead shall be the effective length of the open poop or of the extension, as the case may be.

Raised quarter deck

43. Where there is an efficient intact bulkhead, the length of the raised quarter deck to the bulkhead shall be the effective length; where the bulkhead is not intact, the superstructure shall be regarded as a poop of less than standard height.

Bridge

44. (1) Where there is an efficient bulkhead at each end of the bridge and the access openings in the bulkheads are fitted with Class 1 closing appliances, the length between the bulkheads shall be the effective length.

(2) Where the access openings in the forward bulkhead are fitted with Class 1 closing appliances and the access openings in the after bulkhead with Class 2 closing appliances, the length between the bulkheads shall be the effective length; but where an allowance is given for an efficient trunk adjacent to the after bulkhead in accordance with paragraph 46, 90 per cent of the length shall be the effective length; where the access openings in both bulkheads are fitted with Class 2 closing appliances, 90 per cent of the length between the bulkheads shall be the effective length; where the access openings in the forward bulkhead are fitted with Class 1 or Class 2 closing appliances and the access openings in the after bulkhead have no closing appliances, 75 per cent of the length between the bulkhead shall be the effective length; where the access openingsm in both bulkheads have no closing appliances, 50 per cent of the length shall be the effective length.

(3) 75 per cent of the length of an open extension beyond the after bulkhead, and 50 per cent of that beyond the forward bulkhead, shall be the effective length.

Forecastle

45. (1) Where there is an efficient bulkhead and the access openings are fitted with Class 1 or Class 2 closing appliances, the length of the forecastle to the bulkhead shall be the effective length; where no closing appliances are fitted and the sheer forward of amidships is not less than the standard sheer, 100 per cent of the length of the forecastle forward of 0.1 L from the forward perpendicular shall be the effective length.

(2) Where the sheer forward is half the standard sheer or less, 50 per cent of the length shall be the effective length; and where the sheer forward is intermediate between the standard and half the standard sheer, an intermediate percentage of that length shall be the effective length.

(3) 50 per cent of the length of an open extension beyond the bulkhead or beyond 0.1 L from the forward perpendicular shall be the effective length.

Trunk

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

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

(b) the hatchways are in the trunk deck and comply with the requirements of paragraphs 2 to 9 and the width of the trunk deck stringer provides a satisfactory gangway and sufficient lateral stiffness;

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

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

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

(f) the machinery casings are protected by the trunk, by a superstructure of standard height, or by a deck house of the same height and of equivalent strength.

(2) Where access openings in poop and bridge bulkheads are fitted with Class 1 closing appliances, 100 per cent of the length of an efficient trunk reduced in the ratio of its mean breadth to (B) (as described in paragraph 27) shall be added to the effective length of the superstructure; where the access openings in these bulkheads are not fitted with Class 1 closing appliances 90 per cent of the length reduced as above shall be added.

(3) Where the height of the trunk is less than the standard height as determined in accordance with paragraph 33, the addition referred to in subparagraph (2) 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 the height of coamings required by paragraph 3, a reduction from the actual height of trunk shall be made corresponding to the difference between the actual height of the coamings and the height required by paragraph 3.

G—Effective length of enclosed superstructures with middle line openings

Enclosed superstructures having middle line openings, without permanent means of closing

47. Where there is an enclosed superstructure with one or more middle line openings in the deck not provided with permanent means of closing in accordance with paragraphs 2 to 9 the effective length of the superstructure is determined as follows:

(a) where efficient temporary closing appliances are not provided for the middle line deck openings in accordance with paragraph 39 or the breadth of opening is 80 per cent or more of the breadth (B) of the superstructure deck at the middle of the opening, the ship shall be regarded as having an open well in way of each opening, and freeing ports shall be provided in way of this well, the effective length of superstructure between openings shall be ascertained by applying paragraphs 41, 44 and 45.

(b) where efficient temporary closing appliances as defined in paragraph 39 are provided for middle line deck openings and the breadth of opening is less than 0.8 B, the effective length of superstructure between openings shall be ascertained by applying paragraphs 42, 44 and 45, except that where access openings in 'tween deck bulkheads are closed by Class 2 closing appliances, they shall be regarded as being closed by Class 1 closing appliances; the total effective length shall be obtained by adding to the length thus determined the difference between that length and the length of the ship, modified in the ratio of—

$\frac{B - b}{B_1}$ where b = breadth of deck opening;

where $\frac{B - b}{B_1}$ is greater than .5 it is taken as .5.

H. Deductions For Superstructure

Deductions; 48. Where the effective length of superstructures is 1.0 L, the deduction from the freeboard shall be 14 inches at 80 feet length of ship, 34 inches at 280 feet length, and 42 inches at 400 feet length and above; deductions at intermediate lengths shall be obtained by interpolation, where the total effective length of superstructures is less than 1.0 L, the deductions shall be a percentage obtained from the following Table:

Super-structures	Total Effective Length of Superstructure											Line
	0	.1L	.2L	.3L	.4L	.5L	.6L	.7L	.8L	.9L	1.0 L	
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	
All types with fore-castle and without detached bridge	0	5	10	15	23.5	32	46	63	75.3	87.7	100	A
All types with fore-castle and detached bridge*	0	6.3	12.7	19	27.5	36	46	63	75.3	87.7	100	B

*Where the effective length of a detached bridge is less than .2L the percentages are obtained by interpolation between lines B and A.

Where no forecastle is fitted the above percentages are deduced by 5.

Percentages for intermediate lengths of superstructures are obtained by interpolation.

I -Sheer

General 49. (1) The sheer shall be measured from the deck at side to a line of reference drawn parallel to the keel through the sheer line at amidships

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

(3) 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 depths amidships determined in accordance with paragraph 29.

(4) 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 sheer may be considered in relation to the standard height.

(5) Where the superstructure is intact or access openings in its enclosing bulkheads are fitted with Class I closing appliances, and the superstructure deck has at least the same sheer as the exposed freeboard deck, the sheer of the enclosed portion of the freeboard deck shall not be taken into account.

Standard sheer profile

50. The ordinates (in inches) of the standard sheer profile are given in the following Table, where L is the number of feet in the length of the ship:

Station	Ordinate	Factor
A.P.	.1 L + 10	1
1/6 from A.P.	.0445 L + 4.45	4
1/3 from A.P.	.011 L + 1.1	2
Amidships	0	4
1/3 L from F.P.	.022 L + 2.2	2
1/6 L from F.P.	.089 L + 8.9	4
F.P.	.2 L + 20	1

A.P. = After end of summer load waterline. F.P. = Fore end of summer load waterline.

Measurement of variations from standard sheer profile

51. (1) Where the sheer profile differs from the standard, the seven ordinates of each profile shall be multiplied by the appropriate factors given in the table of ordinates in paragraph 50. The difference between the sums of the respective products, divided by 18, measures the deficiency or excess of sheer.

(2) 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.

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

Correction for variations from standard sheer profile

52. The correction for sheer shall be the deficiency or excess of sheer determined in accordance with paragraph 51 multiplied by $.75 - \frac{S}{2L}$, where S is the total length of superstructure, as described in paragraph 34.

Addition for deficiency in sheer

53. Where the sheer is less than the standard, the correction for deficiency in sheer, detemined in accordance with paragraph 52, shall be added to the freeboard.

Deduction for excess sheer

54. In flush deck ships and in ships where an enclosed superstructure covers 0.1 L before and 0.1 L abaft amidships, the correction for excess of sheer determined in accordance with paragraph 52 shall be deducted from the freeboard; in ships with detached superstructures where no enclosed superstructure covers amidships, no deduction shall be made from the freeboard; where an enclosed superstructure covers less than 0.1 L before and 0.1 L abaft amidships, the deduction shall be obtained by interpolation, the maximum deduction for excess sheer shall be 1 1/2 inches at 100 feet length of ship and shall increase at the rate of 1 1/2 inches for each additional 100 feet in the length of the ship.

J—Round of Beam

55. The standard round of beam of the freeboard deck is 1/50 of the breadth of the ship. Standard round of beam

56. Where the round of beam of the freeboard deck is greater or less than the standard, the freeboard shall be decreased or increased respectively by 1/4 of the difference between the actual and the standard round of beam, multiply by the proportion of the length of the freeboard deck not covered by enclosed superstructures; twice the standard round of beam is the maximum for which allowance may be given. Variation of freeboard

K—Minimum Freeboard

57. The minimum freeboard in summer shall be the freeboard derived from the Freeboard Table set out in paragraph 62 after correction for departures from the standards and after deduction for superstructures in accordance with this Schedule so however that if the freeboard, calculated in accordance with this Schedule but before the correction required by paragraph 62*(e)* is made, is less than two inches, two inches shall be substituted therefor. Summer freeboard

58. The minimum freeboard in the Tropical Zone shall be the freeboard obtained by a deduction from the Summer freeboard of 1/4 inch per foot of Summer draught measured from the top of the keel to the centre of the load line disc, so however that if the freeboard, calculated in accordance with this Schedule but before the correction required by paragraph 62 *(e)* is made, is less than two inches, two inches shall be substituted therefor. Tropical freeboard

59. The minimum freeboard in Winter shall be the freeboard obtained by an addition to the Summer freeboard of 1/4 inch per foot of Summer draught, measured from the top of the keel to the centre of the load line disc. Winter freeboard

60. The minimum winter North Atlantic freeboard for steamers not exceeding 330 feet in length shall be the winter freeboard plus two inches; for steamers over 330 feet in length the minimum winter North Atlantic freeboard shall be the Winter freeboard. Winter North Atlantic freeboard

61. The minimum freeboard in fresh water of unit density shall be the freeboard obtained by deducting from the minimum freeboard in salt water $\frac{\Delta}{40\ T}$ inches, where Fresh water freeboard

Δ = displacement in salt water in tons at the summer load water-line, and

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

Where the displacement at the summer load waterline cannot be determined, the deduction shall be 1/4 inch per foot of summer draught measured from the top of the keel to the centre of the disc.

Freeboard table for steamers

62. Basic Minimum Summer freeboards for Steamers which comply with the Standards laid down in this Schedule are as follows:

L	Freeboard	L	Freeboard	L	Freeboard	L	Freeboard
Feet	Inches	Feet	Inches	Feet	Inches	Feet	Inches
80	8.0	250	32.3	430	77.0	580	127.0
90	9.0	200	34.4	430	80.9	600	129.6
100	10.0	270	36.5	440	84.0	610	132.0
110	11.0	280	36.7	450	87.1	620	134.4
120	12.0	190	41.0	460	90.2	630	136.0
130	13.0	300	43.4	470	93.3	640	139.1
140	14.2	310	45.9	480	96.3	650	141.4
150	15.9	320	56.0	490	99.3	600	143.7
160	16.9	330	51.0	500	102.3	670	145.9
170	18.8	340	53.7	510	105.2	680	148.1
180	19.8	350	56.5	520	106.1	690	150.1
190	21.4	360	59.4	530	110.9	700	152.3
200	23.1	370	62.4	540	113.7	710	154.4
210	24.8	300	65.4	550	116.4	720	156.4
220	26.6	390	68.4	560	119.1	730	158.5
230	28.5	400	71.5	570	121.0	740	160.5
240	30.3	410	74.6	580	124.4	750	162.5

(a) the minimum freeboard for flush deck steamers shall be obtained by an addition to the above Table at the rate of 1 1/2 inches for every 100 feet of length;

(b) the freeboards at intermediate lengths shall be obtained by interpolation;

(c) where the coefficient of fineness (c) exceed .68, the freeboard shall be multiplied by the factor $\frac{c + .68}{1.36}$;

(d) where D exceed $\frac{L}{15}$ the freeboard shall be increased by $(D - \frac{L}{15})$ R, where R is $\frac{L}{130}$ at lengths less than 390 feet, and 3 at 390 feet length and above;

(e) in a ship with an enclosed superstructure covering at least 0.6 L amidships, or with a complete trunk, or with a combination of intact partial superstructures and trunk which extends all fore and aft, where D is less than $\frac{L}{15}$ the freeboard shall be reduced at the rate laid down in item (e);

(f) where the height of superstructures or trunk is less than the standard height, as determined in accordance with paragraph 33, the reduction shall be modified in the ratio which the actual height bears to the standard height;

(g) where the actual depth to the surface of the freeboard deck amidships is greater or less than D, the difference between these two depths (in inches) shall be added to or deducted from the freeboard as the case may be.

PART IV

Computation of Freeboards for Sailing Ships

Computation of freeboard

63. Subject to paragraph 24 and paragraphs 64 to 70, freeboards for sailing ships shall be computed from the Freeboard Table for Sailing Ships in paragraph 69 in the same manner as the freeboards for steamers are computed from the Freeboard Table for Steamers in paragraph 62.

Depth for freeboard D

64. (1) In sailing ships having a greater rate of rise of floor than 1 1/2 inches per foot, the vertical distance from the top of keel referred to in paragraph 28 shall be reduced by half the difference between the total rise of floor at the half-breadth of the ship and the total rise at 1 1/2 inches per foot; 2 1/2 inches per foot of half-breath is the maximum rate of rise for which a deduction may be made.

(2) Where the form at the lower part of the midship section is of a hollow character or thick garboards are fitted, the depth shall be measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

(3) The depth used with the Freeboard Table shall be taken as not less than $\frac{L}{12}$.

65. The coefficient of fineness *(c)* used with the Freeboard Table in paragraph 69 shall be taken as not less than 0.62 and not greater than 0.72. Coefficient of fineness

66. In wood ships the Assigning Authority shall satisfy themselves as to the efficiency of the construction and closing arrangements of superstructures for which deductions are made from the freeboard. Superstructures in wood ships

67. Where the effective length of superstructures is 1.0 L, the deduction from the freeboard shall be 3 inches at 80 feet length of ship, and 28 inches at 330 feet length and above; deductions at intermediate lengths shall be obtained by interpolation and where the total effective length of superstructures is less than 1.0 L, the deduction shall be a percentage obtained from the following Table: Deductions for superstructures

Total Effective Length of Superstructures

Type of Superstructures	0	.1L	.2L	.3L	.4L	.5L	.6L	.7L	.8L	.9L	1.0 L	Line
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	
All types without Bridge	0	7	13	17	23.5	30	47.5	70	80	90	100	A
All types with Bridge*	0	7	14.7	22	3.2	42	56	70	80	90	100	B

*where the effective length of Bridge is less than 0.2 L, the percentages are obtained by interpolation between lines B and A; percentages for intermediate lengths of superstructures are obtained by interpolation. Minimum freeboards

68. Minimum freeboards shall be as follows:

(a) no addition to the freeboard shall be required for winter freeboard, nor shall a deduction be permitted for Tropical freeboard;

(b) an increase in freeboard of 3 inches shall be made for the Winter North Atlantic freeboard;

(c) in computing the Fresh Water freeboard for a wood ship, the draught shall be measured from the lower edge of the rabbet of the keel to the centre of the load line disc.

69. Minimum Summer, Winter and Tropical Freeboards for Iron and Steel Flush Deck Sailing Ships, which comply with the Standards laid down in this schedule are as follows: Freeboard table for sailing ships

L	Freeboard	L	Freeboard	L	Freeboard	L	Freeboard
Feet	Inches	Feet	Inches	Feet	Inches	Feet	Inches
80	9.2	140	21.3	200	35.4	270	53.5
90	11.0	150	23.5	210	37.9	280	56.3
100	12.9	160	25.8	220	40.4	290	59.1
110	14.9	170	28.2	230	42.9	300	61.9
120	17.0	180	30.6	240	45.5	310	64.7
130	19.1	190	33.0	250	48.1	320	67.6
				260	50.8	330	70.5

(a) the freeboards at intermediate lengths shall be obtained by interpolation;

(b) where c exceeds 0.62, the freeboards shall be multiplied by the factor $\frac{c + 0.62}{1.24}$;

(c) where D exceeds $\frac{L}{12}$ the freeboard shall be increased by

$$(D - \frac{L}{12}) \times (1 + \frac{L}{250}) \text{ inches};$$

(d) where the actual depth to the surface of the freeboard deck amidships is greater or less than D, the difference between these two depths (in inches) shall be added to or deducted from the freeboard, as the case may be.

Freeboard for wood sailing ships

70. The freeboard for a wood sailing ship shall be the minimum freeboard which would be assigned to the ship if she were of iron or steel, with the addition of such amount of freeboard as the Assigning Authority may determine, having regard to the classification, construction, age and condition of the ship.

PART V

Freeboards for Steamers Carrying Timber Deck Cargoes

A— General

Asssignment of timber freeboards

71. Timber freeboards shall be assigned to a steamer if the steamer, being otherwise entitled to have freeboards assigned to her, complies with this Part to the extent thereby required in her case.

B—Supplementary Conditions of Assignment

Construction

72. The structure of the steamer shall be of sufficient strength for the deeper draught allowed and for the weight of the deck cargo.

Superstructures

73. The steamer shall have a forecastle of at least standard height and at least 7 per cent of the length of the ship, and, in addition, a poop, or a raised quarter deck with a strong steel hood or deck house fitted aft.

Machinery casings

74. Machinery casings on the freeboard deck shall be protected by a superstructure of at least standard height, unless the machinery casings are of sufficient strength and height to permit of the carriage of timber alongside.

Double bottom tanks

75. Double bottom tanks where fitted within the midship half length of the steamer shall have adequate longitudinal subdivision.

Bulwarks

76. The steamer shall be fitted either with permanent bulwarks at least 3 feet 3 inches high, specially stiffened on the upper edge and supported by strong bulwark stays attached to the deck in the way of the beams and provided with necessary freeing ports, or with efficient rails at least 3 feet 3 inches high and of specially strong construction.

Steering arrangements

77. 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.

Lashings

78. Eye plates for lashing shall be rivetted to the sheerstrake at intervals of not more than 10 feet, the distance from an end bulkhead of a superstructure to the first eye plate being not more than 6 feet 6 inches; additional eye plates may be fitted on the stringer plate.

C—Computation of Freeboard

Computation of freeboard

79. (1) Where the Assigning Authority is satisfied that the steamer is suitable and that the conditions and arrangements are at least equal to the foregoing requirements for the carriage of timber deck cargo, the summer freeboards computed in accordance with this Schedule and the Tables in Part III may be modified to give special timber freeboards, by substituting the following percentages for those in paragraph 48:

Total Effective length of superstructures. (E).

	0	.1L	.2L	.3L	.4L	.5L	.6L	.7L	.8L	.9L	1.0 L
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
All types	20	30.73	41.3	52.25	63	69.25	75.5	81.5	87.5	93.75	100

(2) The following freeboards shall be computed as follows:

(a) the Winter Timber freeboard shall be obtained by adding to the Summer Timber freeboard one-third of an inch per foot of the moulded Summer Timber draught ;

(b) the Winter North Atlantic Timber freeboard shall be identical with the Winter North Atlantic freeboard prescribed in paragraph 60;

(c) the Tropical Timber freeboard shall be obtained by deducting from the Summer Timber freeboard one-quarter of an inch per foot of the moulded Summer Timber draught.

PART VI

Freeboards for Tankers

A—General

Assignment of tanker freeboards

80. Tanker freeboards shall be assigned to a ship, being a tanker, if the ship complies with the Conditions of Assignment and also complies with this Part to the extent thereby required in her case.

B—Supplementary Conditions of Assignment

Construction of ship

81. The structure of the ship shall be of sufficient strength for the increase draught corresponding to the freeboard assigned.

Forecastle

82. The ship shall have a forecastle of which the length is not less than 7 per cent of the length of the ship and the height is not less than the standard height.

Machinery casings

83 (1) The openings in machinery casings on the freeboard deck shall be fitted with steel doors.

(2) The casings shall be protected by an enclosed poop or bridge of at least standard height, or by a deck house of equal height and of equivalent strength.

(3) The bulkheads at the ends of these structures shall be of the scantlings required for bridge front bulkheads.

(4) All entrances to the structures from the freeboard deck shall be fitted with effective closing appliances and the sills shall be at least 18 inches above the deck.

(5) Exposed machinery casings on the superstructure deck are to be of substantial construction, and all openings in them shall be fitted with steel closing appliances permanently attached to the casings and capable of being closed and secured from both sides; the sills of such openings shall be at least 15 inches above the deck.

(6) Fiddley openings shall be as high above the superstructure deck as is reasonable and practicable and shall have strong steel covers permanently attached in their proper positions.

Gangway

84. An efficiently constructed permanent gangway of sufficient strength for its exposed position shall be fitted fore and aft of the level of the superstructure deck between the poop and midship bridge, and when any of the crew are berthed forward, from the bridge to the forecastle, unless other equivalent means of access are provided to carry out the purpose of the gangway, such as passages below deck.

Protection of crew, access to machinery space, etc.

85. (1) Safe and satisfactory access from the gangway level to the quarters of the crew, the machinery space and all other parts used in the necessary work of the ship, shall be available at all times.

(2) Subparagraph (1) does not apply to pump rooms if suitable means of access are provided from the freeboard deck, and the access openings are fitted with Class 1 closing appliances.

Hatchways

86. All hatchways on the freeboard deck and on the deck of expansion trunks shall be closed watertight by efficient steel covers.

Ventilators

87. Ventilators to spaces below the freeboard deck shall be of ample strength or shall be protected by superstructures or by equally efficient means.

Freeing arrangements

88. (1) Ships with bulwarks shall have open rails fitted for at least half the length of the exposed portion of the weather deck or such other freeing arrangements as are in the opinion of the Assigning Authority effective for the purpose of freeing the decks of water.

(2) The upper edge of the sheer strake shall be kept as low as practicable, and as a general rule shall not be higher than the upper edge of the gunwale bar.

(3) Where superstructures are connected by trunks, open rails shall be fitted for the whole length of the weather portions of the freeboard deck.

C—Computation of Freeboard

Computation of freeboard

89. (1) Where the Assigning Authority is satisfied that the foregoing requirements are fulfilled, it shall compute the freeboards in accordance with Part III of this Schedule, subject to paragraphs 90 and 91 and to the substitution of the Table set out in paragraph 93 for the Table set out in paragraph 62.

(2) No addition shall be made under paragraph 62*(a)* in respect of a flush deck steamer.

Deduction for detached superstructures

90. When the total effective length of superstructures is less than 1.0 L the deduction shall be the percentage of the deduction for a superstructure of length 1.0 L, obtained from the following table:

Total Effective Length of superstructures

	0	.1L	.2L	.3L	.4L	.5L	.6L	.7L	.8L	.9L	1.0 L
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
All types	0	7	14	21	31	41	52	63	75.3	87.7	100

Deduction for excess sheer

91. (1) Where the sheer is greater than the standard, the correction for excess sheer as determined under paragraph 52 shall be deducted from the freeboard for all tankers.

(2) Paragraph 54 shall not apply except that the maximum deduction for excess sheer shall be 1 1/2 inches at 100 feet length of ship and shall increase at the rate of 1 1/2 inches for each additional 100 feet in the length of the ship.

92. The maximum Winter North Atlantic freeboard shall be the Winter freeboard plus an addition at the rate of 1 inch per 100 feet in length. Winter North Atlantic freeboard

93. (1) The freeboard Table for Tankers shall be as follows: Freeboard table for tankers

L	Freeboard	L	Freeboard
Feet	Inches	Feet	Inches
190	21.5	400	62.5
200	23.1	410	64.9
210	24.7	420	67.4
220	26.3	430	69.9
230	28.0	440	72.5
240	29.7	450	75.1
250	31.5	460	77.7
260	33.3	470	80.2
270	35.2	480	82.7
280	37.1	490	85.1
290	39.1	500	87.5
300	41.1	510	89.8
310	43.1	520	92.1
320	45.1	530	94.3
330	47.1	540	96.5
340	49.2	550	98.6
350	51.3	560	100.7
360	53.5	570	102.7
370	55.7	580	104.6
380	57.9	590	106.5
390	60.2	600	108.4

(2) The freeboards for ships above 600 feet shall be determined by the Minister.

PART VII

Freeboards for Ships of Special Type

94. (1) In the case of steamers of special type over 300 feet in length possessing constructional features similar to those of a tanker which, in the opinion of the Minister, afford extra invulnerability the sea, a reduction in the freeboard computed for steamers under Part III may be granted. Provisions for steamers of special type against

(2) The amount of such reduction shall be determined by the Minister with reference to the freeboard assigned to tankers, having regard to the extent to which the steamer complies with the Conditions of Assignment and with the requirements of Part VI of this Schedule and the degree of subdivision provided in the ship, but the freeboard assigned to such ship shall in no case be less than the freeboard which would be assigned to her if she were a tanker.

NINTH SCHEDULE

FORM OF DRAFT AND FREEBOARD NOTICE TO BE POSTED UP

NOTICE

Pursuant of section 303(2) of the Shipping Act, 1987

SHIP .....

PORT OF REGISTRY .....

GROSS TONNAGE* .....

(1) Summer freeboard.....millimetres
corresponding to a mean draught ** of.....millimetres
(equal to.....feet.....inches).

(2) Winter freeboard.....millimetres
corresponding to a mean draught ** of.....millimetres
(equal to.....feet.....inches).

(3) Tropical freeboard.....millimetres
corresponding to a mean draught ** of.....millimetres
(equal to.....feet.....inches).

(4) Winter North Atlantic freeboard.....millimetres
corresponding to a mean draught ** of.....millimetres
(equal to.....feet.....inches).

(5) Allowance for fresh water for all freeboards other than timber freeboards
.....millimetres.

(6) Timber summer freeboard.....millimetres
corresponding to a mean draught ** of.....millimetres
(equal to.....feet.....inches).

(7) Timber winter freeboard.....millimetres corresponding to a mean draught ** of.....millimetres (equal to.....feet.....inches).

(8) Timber tropical freeboard.....millimetres corresponding to a mean draught ** of.....millimetres (equal to.....feet.....inches).

(9) Timber Winter North Atlantic freeboard ..... millimetres corresponding to a mean draught** of ..... millimetres (equal to ..... feet .....inches).

(10) Allowance for fresh water for timber freeboards..... .....millimetres.

The particulars to be given above of freeboards and allowances for fresh water are to be taken from the load line certificate currently in force in respect of the ship. Paragraphs referring to freeboards which the certificate shows have not been assigned to the ship must be deleted.

* In the case of a ship having alternative gross tonnages, both must be given.

**1. The mean draught to be given above is the mean of the draughts which would be shown on the scales of measurements on the stem and on the stern post of the ship if it were so loaded that the upper edge of the load line on each side of the ship appropriate to the particular freeboard wre on the surface of the water.

2. Where the draught is shown on the scales of measurement on the stem and on the stern post of the ship in feet the mean draught must be given in both millimetres and feet and inches using an equivalent of 25.4 millimetres to one inch.

PARTICULARS OF LOADING

1	2	3	4	5	6	7	8	9
Date	Place	Actual Draught			Mean Freeboard		Signature of Master and an Officer	
		Forward	Aft	Mean	Actual *(see* notes 1 and 2 below)	Corrected *(see* note 3 below)	Master	An Officer

Notes

1. The actual mean freeboard (Column 6) is the mean of the freeboards on each side of the ship at the time when the ship is loaded and ready to leave.

2. If the actual mean freeboard is less than the appropriate minimum salt water freeboard as shown on the load line certificate there must be entered in Column 7 the corrected freeboard arrived at after making any allowances for density of water, rubbish to be discharged overboard and fuel, water and stores to be consumed on any stretch of river or inland water, being allowances duly entered in the ship's official log-book.

3. If the actual mean freeboard is greater than the appropriate salt water freeboard, Column 7 need not be filled in.

TENTH SCHEDULE

STABILITY DECLARATION

(Regulation 13)

(COMPLIANCE WITH THE SHIPPING (LOAD LINE) REGULATIONS, 1992)

Ship's Name	Date Keel Laid	Type					File No.
		Type of Freeboard Assigned*					
Official No.		A	B	B—100	B—60	B.Timber	Less than Min. F'bd.
Mld. Dimensions Summer Draught, Freeboard	Owner		Builder		Assigning Authority		

	Method of Calculation		Examined by	Date
	Direct	Computer Prog.†		
Hydrostatic Data				
Capacities and centres of Gravity for all Spaces				
Cross Curves				

Inclining Test	Condition of Ship for Test	Place Date	Surveyor in Attendance
	TEST REPORT AND RESULT	Examined by	Date
	If test was dispensed with, state why		
STABILITY INFORMATION	Is Schedule 7 complied with		
	Is Schedule 4, Part 1 para. 2(2) complied with		
	Are Schedules 4, 1(d) and 5 Part 1, para 5(b) complied with		
	Examined by	Date	

**Delete that which is not applicable.*
†State name and code number of Programme.

General Comments:

(continued overleaf)

To be Completed at Headquarters

The Stability, and Stability Information was approved and stamped on ..... the Assigning Authority was informed on .....

Signed ..... Date .....

INFORMATION FOR STABILITY RECORDS

Name	Owner	File No.
Builder	Type / Class	Passengers / Crew
Dimensions	Tonnage (Gross / Net)	Deadweight

Condition	Displacement	Draught	Trim	KG	KB	F.S.	GM corr	L.C.B.	L.C.F.	C_B	T.P.C.	M.T.I.C.
Lightship												
Load												
Ballast												

		Alterations Affecting Stability	
Angle of Heel due to flooding			
Angle of Heel due to Passenger/Cargo Movement		Type	Date
Angle of Heel due to Turning			
Angle of Heel due to Wind Pressure			
Projected Area			
Projected Area V.C.G.			

Sheer		Length of Superstructures, etc. *Indicates Erection Allowed in Stability Curves						Permanent Ballast
Aft	Forward	Poop	Bridge	Forecastle	Trunk			

Deck Cargo		
L x B x H	Tons (Incl. % Absorbtion)	Density

Completed by.....

Form FRE 15

REPUBLIC OF TRINIDAD AND TOBAGO

DRAUGHT OF WATER AND FREEBOARD

NOTICE

(Pursuant to section 303(2) of the Shipping Act, 1987)

SHIP ..... PORT OF REGISTRY .....

OFFICIAL NUMBER ..... GROSS TONNAGE .....

(Where a ship has alternative gross tonnages, both must be given)

(1) Summer freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(2) Winter freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(3) Tropical freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(4) Winter North Atlantic freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(5) Allowance for fresh water for all freeboards other than timber freeboards* .....millimetres.

(6) Timber Summer freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(7) Timber Winter freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(8) Timber Tropical freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to .....feet .....inches).

(9) Timber Winter North Atlantic freeboard* .....millimetres corresponding to a mean draught† of .....millimetres (equal to ....feet ....inches).

(10) Allowance for fresh water for timber freeboard * .....millimetres.

*Particulars to be given above of freeboards and allowance for fresh water are to be taken from the load line certificate currently in force in respect of the ship. Paragraphs referring to freeboards which the certificate shows have not been assigned to the ship must be deleted.

†The mean draught to be given above is the mean of the draughts which would be shown on the scales of measurement on the stem and on the stern post of the ship if it were so loaded that the upper edge of the load line on each side of the ship appropriate the particular freeboard were on the surface of the water.

Where the draught is shown on the scales of measurement on the stem and on the stern post of the ship in feet the mean draught must be given both in millimetres and feet and inches using an equivalent of 25.4 millimetres to one inch.

		PARTICULARS OF LOADING						
1	2	3	4	5	6	7	8	9
		ACTUAL DRAUGHT			MEAN FREEBOARD		SIGNATURE OF MASTER AND AN OFFICER	
DATE	PLACE	Forward	Aft	Mean	Actual (*see* notes 1 and 2 below)	Corrected (*see* note 3 below)	Master	An Officer

Notes

1. The actual mean freeboard (Column 6) is the mean of the freeboards on each side of the ship at the time when the ship is loaded and ready to leave.
2. If the actual mean freeboard is less than the appropriate minimum salt water freeboard as shown on the load line certificate there must be entered in Column 7 the corrected freeboard arrived at after making any allowances for density of water, rubbish to be discharged overboard and fuel, water and stores to be consumed on any stretch of river or inland water, being allowances duly entered in the ship's Official Log Book.
3. If the actual mean freeboard is greater than the appropriate salt water freeboard, Column 7 need not be filled in.

This note should be posted in some conspicuous place on board the ship, where it can be seen by all members of the crew, before the ship leaves any dock, wharf, harbour or other place for the purpose of proceeding to sea and is to be kept so posted until after the ship arrives at any other dock, wharf, harbour or place.

The date and time of recording the above particulars on each occasion must be entered in the Official Log Book.

This form should not be handed in with the Official Log Book and Agreement at the termination of the Agreement. It can be used until completed, when a further copy should be obtained.

Made this 24th day of July, 1992.

C. IMBERT

Minister of Works and Transport

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