

AGREEMENT No. 2
(of September 3, 1998)

“Whereby the Regulations for the Admeasurement of Vessels to Assess Tolls for Use of the Panama Canal are Approved”

THE BOARD OF DIRECTORS OF THE PANAMA CANAL AUTHORITY

WHEREAS:

Pursuant to article 18.2 of the Panama Canal Authority Organic Law, the Board of Directors is responsible for determining, upon previous consultation with the Administrator, the vessel admeasurement system to be used by the Canal for transiting vessels.

The draft regulations for the admeasurement of vessels have been submitted to the Board of Directors by the Canal Administrator for its consideration.

AGREES:

The following regulations for the admeasurement of vessels to assess tolls for use of the Panama Canal are adopted:

**“REGULATIONS FOR THE ADMEASUREMENT OF VESSELS TO ASSESS TOLLS
FOR USE OF THE PANAMA CANAL**

Chapter I
General Standards and Definitions

Article 1: These regulations establish the procedures and rules for the admeasurement of vessels, to assess the tolls to be charged by the Panama Canal Authority for the use of the Panama Canal, pursuant to its Organic Law.

Article 2: The words, expressions and acronyms used in these regulations shall have the following definitions:

Appendix. Complementary rules for the determination of the Panama Canal Universal Measurement System (PC/UMS) Net Tonnage, which is an integral part of these regulations.

Warship. Any vessel of government ownership that is being employed by its owners for military purposes, including armed coast guard patrol boats and naval training vessels. Auxiliary vessels such as tankers, ammunition vessels, refrigerator vessels, repair vessels, tenders, or vessels used to transport general military supplies, are excluded from this definition.

International Tonnage Certificate, 1969 (ITC 69). International Tonnage Certificate issued in accordance with the 1969 International Convention on Tonnage Measurement of Ships.

Upper Deck. The uppermost complete deck exposed to weather and sea, which has permanent means of weathertight closing of all openings in the weather part thereof, and below which all openings in the sides of the vessel are fitted with permanent means of watertight closing.

Weathertight. Water does not penetrate in the vessel, regardless of the condition of the sea.

Enclosed spaces. Those bounded by the vessel's hull, by fixed or portable partitions or bulkheads, by decks or coverings other than permanent or movable awnings. No break in a deck, nor any opening on the vessel's hull, in a deck or in a covering of a space, or in the partitions or bulkheads of a space, nor the absence of a partition or bulkhead, shall preclude a space from being included in the enclosed space.

Excluded spaces. Notwithstanding the definition of enclosed spaces, the spaces referred to in Part C of Appendix, which are not included in the volume of the enclosed spaces. However, they shall be considered enclosed spaces when they meet any of the conditions stated in the first paragraph of the aforementioned Part.

Breadth or moulded breadth. The maximum breadth of the vessel, measured amidships to the moulded line of the frame in a vessel with a metal shell and to the outer surface of the hull in a vessel with a shell of any other material.

Passenger. Every person on board, other than the master, members of the crew or other persons employed or engaged in any capacity on board on the business of that vessel, and children under one year of age.

Moulded Depth. The vertical distance measured from the top of the keel to the underside of the upper deck at side, with the variations described in Part A of Appendix of these regulations.

Universal Measurement System (UMS). The set of rules, measurements and calculations applicable for determining the gross and net tonnage, adopted in accordance with the 1969 International Convention on Tonnage Measurement of Vessels.

Panama Canal Universal Measurement System (PC/UMS). The system based on the Universal Measurement System, 1969, using its parameters for determining the total volume of a vessel with the additional variations established by the Authority.

Volume of Maximum Capacity (VMC). The volume, in cubic meters, of the maximum capacity of the containers that a vessel may carry on or above the upper deck, which shall be calculated by multiplying the maximum amount of containers the vessel may carry by 29.2 cubic meters or by other generally accepted methods that meet the accuracy standards of the Authority. For these purposes, the external dimensions of a container are 8 feet by 8 feet by 20 feet, or its equivalent to 36.25 cubic meters. The Volume of maximum capacity will not include any other container capacity that is included in *V*.

Total volume (V). The enclosed space of the vessel, expressed in cubic meters.

Article 3: The following shall be subject to measurement:

1. The enclosed spaces below deck.
2. The enclosed spaces above deck.
3. The cargo capacity of the containers above deck.

Article 4: The Administrator of the Authority shall interpret and apply the rules of admeasurement established by these regulations.

Chapter II Determination of the PC/UMS Net Tonnage

First Section Requirements

Article 5: For the purpose of admeasurement, the vessels transiting the Canal shall present an ITC 69 or a substitute document deemed acceptable by the Authority, based on a system substantially similar to the one adopted by the aforementioned agreement. In addition, these same vessels shall provide plans, classification certificates and documents with information stating the Total Volume of the vessel or sufficient information to determine this volume through mathematical calculations.

Warships, dredges, floating drydocks, vessels with a length overall of 30.48 meters or less, and vessels subject to the transitional relief measures referred to in article 11 of these regulations, are exempted from the requirement of presenting the documents mentioned in this article.

Article 6: In addition to the requirements of the previous article, vessels with capacity for container cargo above deck shall provide plans, classification certificates and documents with sufficient information to determine the volume of the maximum capacity of containers that may be carried above the upper deck, as defined in article 2 of these regulations.

Article 7: Vessels that fail to provide the documents required by the previous articles of these regulations shall be subject to inspection by the Authority to determine their volume, in accordance with the established PC/UMS Net Tonnage.

Article 8: The Authority shall establish the *V* and the *VMC* to be used to calculate the PC/UMS Net Tonnage.

The Authority may request and use complementary *V* and *VMC* information of the vessel provided by the user or any officials, persons or organizations authorized by national governments to undertake surveys and issue national tonnage certificates. The information provided may be verified and corrected, if necessary, to ensure accuracy to the degree required by the Authority.

If the requested documents are not obtained, the user shall accept the figures calculated by the Authority and which are understood by it to reflect the total volume of the vessel.

Second Section Tonnage

Article 9: The tonnage of a vessel shall consist of PC/UMS Net Tonnage, which shall be determined in accordance with the provisions of these regulations.

The net tonnage of novel types of craft whose constructional features make it unreasonable or impossible to apply the rules for the admeasurement of the PC/UMS Net Tonnage, shall be determined in a manner that is acceptable to the Authority.

Article 10: The formula for determining the PC/UMS Net Tonnage of all vessels, except those subject to transitional relief measures, is:

$$\text{PC/UMS Net Tonnage} = K_4(V) + K_5(V) + CF_1(VMC)$$

Article 11: Transitional relief measure is understood as the special treatment granted to the vessels that have made a transit of the Canal between March 23, 1976, and September 30, 1994. They consist in freezing the tonnage according to the Panama Canal Net Tonnage system which was in effect up to September 30, 1994. This measure is applied to vessels as long as they have not undergone a significant structural change, as defined in article 12 of these regulations. These vessels may be exempted from presenting the ITC 69 or any other certificate regarding its *V*.

In these cases, the formula for determining the Panama Canal Universal Measurement System (PC/UMS) Net Tonnage is the following:

$$\text{PC/UMS Net Tonnage} = \text{Panama Canal Net Tonnage} + CF_1(VMC).$$

Article 12: Vessels whose PC/UMS Net Tonnage is determined in accordance with Article 10, may be subject to a new admeasurement if there is a change in the *V*.

Vessels whose PC/UMS Net Tonnage is determined in accordance with article 11, shall retain that tonnage classification as long as they do not undergo any significant structural change, understanding such a change to be a real variation of no less than ten percent (10%) of the vessel's *V*. In the event of a significant structural change, the vessel's PC/UMS Net Tonnage shall be determined in accordance with article 10.

Article 13: The Authority may revise the tonnage if the *VMC* is changed due to any physical modification after the vessel's PC/UMS Net Tonnage has been determined.

Article 14: All volumes included in the calculation of the PC/UMS Net Tonnage shall be measured, irrespective of the fitting of insulation or the like, to the inner side of the shell or

structural boundary plating in vessels constructed of metal, and to the outer surface of the shell or to the inner side of structural boundary surfaces in vessels constructed of any other material.

The *V* shall include the volume of the appendages of the vessel and may exclude the spaces open to the sea.

Article 15: All measurements used in the calculation of volumes shall be taken to the nearest centimeter or to one-twentieth of a foot.

The volumes shall be calculated by generally accepted methods for the space concerned, and with the degree of accuracy accepted by the Authority, verifying the calculations in a detailed manner, so that their precision may be corroborated.

Chapter III **Alternative Method for the Admeasurement of Vessels**

Article 16: When an ITC 69 or suitable substitute or the necessary documentation to calculate the *VMC* are not presented, or when these documents do not meet the accuracy standards acceptable to the Authority, vessels will be measured to include the entire cubic contents of *V* and *VMC*, as defined in this chapter.

Article 17: The Authority shall endeavor to determine the *V* of a vessel as accurately as possible, based on the information available at the time of the calculation, by generally accepted methods for the space concerned and with an accuracy acceptable to the Authority.

Article 18: Vessels that do not present the documentation prescribed by the previous article shall be measured as follows:

(1) The volume of structures above the upper deck may be determined by any method or combination of methods that are acceptable to the Authority. These methods shall include simple geometric formulas, Simpson's rules and other standard mathematical formulas. If special procedures are used, they must be identified.

Measurements and calculations should be sufficiently detailed and concise, so as to permit easy review by the Authority.

(2) The volume of the hull under the upper deck (*UDV*) shall be determined by using the formula:

$$UDV = \{0.91 \times [(LOA \times MB) \times (D - SLD)]\} + (SLDISP/1.025)$$

If the previous formula proves unworkable, the *V* of the hull below the upper deck shall be determined by multiplying the product of the *LOA*, *MB* and *D*, as defined in Part G of the Appendix, by the corresponding coefficient indicated in the following table:

LOA in meters	COEFFICIENT
>0 to 30	.7150
>30 to 60	.7250
>60 to 90	.7360
>90 to 120	.7453
>120 to 150	.7328
>150 to 180	.7870
>180 to 210	.8202
>210 to 240	.7870
>240 to 270	.7328
>270	.7453

(3) The *V* of a vessel is the sum of the volume of the structures above the upper deck as determined in accordance with (1) above, and the volume of the hull below the upper deck, as determined in accordance with the parameters established in (2) above.

Article 19: Vessels which have had their *V* determined in accordance with article 16 may apply for re-admeasurement when they present a new or corrected ITC 69, a suitable substitute, or sufficient documentation to re-calculate their *V*.

Article 20: The *VMC* shall be determined by multiplying the maximum amount of containers by 29.2 m³ or by other generally accepted methods that meet the accuracy standards of the Authority.

Chapter IV **PC/UMS Net Tonnage Certificate**

Article 21: The admeasurement of vessels shall be carried out by the Authority's specialized personnel, or by agents authorized by it. Each transiting vessel shall present to the Authority a complete set of plans and calculation sheets, with the dimensions that served as the basis for obtaining its ITC 69, and a copy of the same.

Article 22: The Authority shall deliver to each vessel or its agent, the PC/UMS Net Tonnage Certificate, which shall be maintained aboard as proof that it has been inspected and measured.

Article 23: The Authority may correct the PC/UMS Net Tonnage Certificates when a difference in the *V* of the vessel is found after examining the documents or inspecting the vessel.

Chapter V Warships, Dredges and Floating Drydocks

Article 24: The toll on warships, dredges and floating drydocks shall be based on their tonnage of actual displacement. To this effect, these vessels shall be required to present documents stating accurately the displacement tonnage at each possible mean draft.

Article 25: The actual displacement tonnage of these vessels shall be determined in a manner acceptable to the Authority, and shall be expressed in long tons (equivalent to 1.016 metric tons or 2 240 pounds).

Article 26: If the user does not produce the necessary documents, the Authority may use any acceptable and practicable method to determine the displacement tonnage.

Chapter VI Final Provisions

Article 27: To prepare the documentation required by the Authority, a vessel must meet the following conditions to be considered in ballast status:

- (1) Not carry passengers.
- (2) Not carry fuel for its own use, in excess of the volume of its liquid fuel tanks certified by official marking.
- (3) Not use the spaces certified and marked as sedimentation tanks for the storage of lubricants or liquid fuel and fixed tanks or compartments for the stowage of cargo or stores.

Non-observance of the foregoing shall cause the vessel to be considered laden.

Article 28: Vessels passing through the locks at either end of the Panama Canal and returning to the original point of entry without passing through the locks at the other end of the Canal, shall be considered as having made a full transit. Re-entry of the same vessel shall be considered a new transit.

Article 29: Vessels of a length overall equal to or less than 30.48 meters (100 feet), unless otherwise prescribed by other regulations, are exempted from the PC/UMS admeasurement.

Article 30: These regulations shall become effective at noon, December thirty-first, nineteen hundred and ninety-nine.

PARAGRAPH: The Administrator of the Panama Canal Authority is hereby authorized to publish and distribute these regulations with a different format, including annotations and comments, to facilitate its use by the users of the Canal.”

Given in Panama, on the third day of the month of September, nineteen hundred and ninety-eight.

To be published and enforced.

Jorge Eduardo Ritter

Tomás Paredes

Minister for Canal Affairs

Secretary

“APPENDIX

A. EXPANSION OF THE DEFINITION OF MOULDED DEPTH:

In **wood and composite vessels** the distance is measured from the lower edge of the keel rabbet. Where the form at the lower section of the midvessel section is of a hollow character, or where thick garboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

In vessels having **rounded gunwales**, the moulded depth 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 gunwales were of angular design.

Where the **upper deck is stepped** and the raised section of the deck extends over the point at which the moulded depth is to be determined, the moulded depth shall be measured to a line of reference extending from the lower section of the deck along a line parallel with the raised section.

B. MEANING OF THE SYMBOLS USED WITH THE FIGURES IN THIS REGULATION:

O = excluded space.

C = enclosed space.

I = space to be considered as an enclosed space.

Hatched in sections to be included as enclosed spaces.

B = breadth of the deck in way of the opening.

In vessels with rounded gunwales the breadth is measured as indicated in Figure 11.

C. DEFINITION OF EXCLUDED SPACES:

Are the spaces described below, unless they meet any of the following three conditions, in which case they shall be considered enclosed spaces:

- The space is fitted with shelves or other means for securing cargo or stores;
- The openings are fitted with any means of closure;
- The construction provides any possibility of such openings being closed.

1.a A space within an erection opposite an end opening extending from deck to deck except for a curtain plate of a depth not exceeding by more than 25 millimeters (one inch) the depth of the adjoining deck beams, such opening having a breadth equal to or greater than 90 percent of the

breadth of the deck at the line of the opening of the space. This provision shall be applied so as to exclude from the enclosed spaces only the space between the actual end opening and a line drawn parallel to the line or face of the opening at a distance from the opening equal to one-half of the width of the deck at the line of the opening (Figure 1).

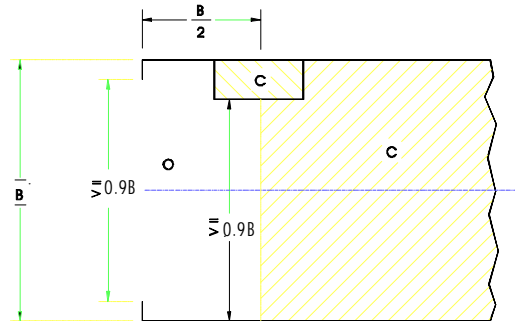


Fig. 1

1.b Should the width of the space because of any arrangement except by convergence of the outside plating, become less than 90 percent of the breadth of the deck, only the space between the line of the opening and a parallel line drawn through the point where the athwarships width of the space becomes equal to or less than 90 percent of the breadth of the deck shall be excluded from the volume of enclosed spaces. (Figures 2, 3 and 4).

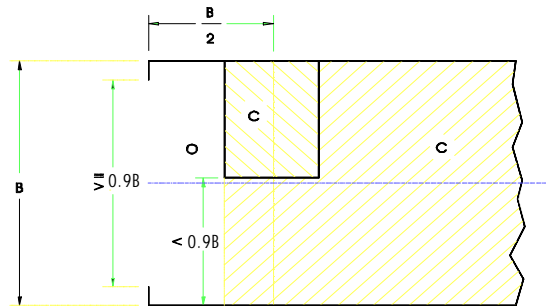


Fig. 2

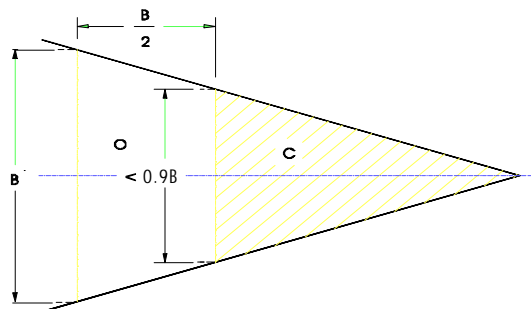


Fig. 3

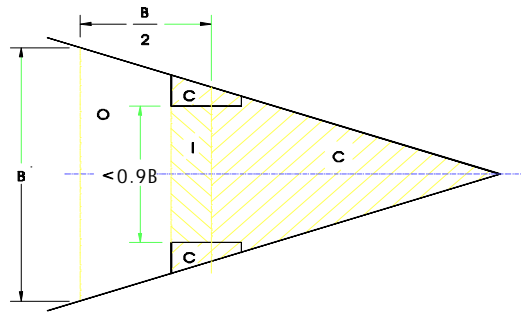


Fig. 4

1.c Where an interval which is completely open except for bulwarks or open rails separates any two spaces, the exclusion of one or both of which is permitted under paragraphs 1.a and 1.b , such exclusion shall not apply if the separation between the two spaces is less than the least half breadth of the deck in way of the separation. (Figures 5 and 6).

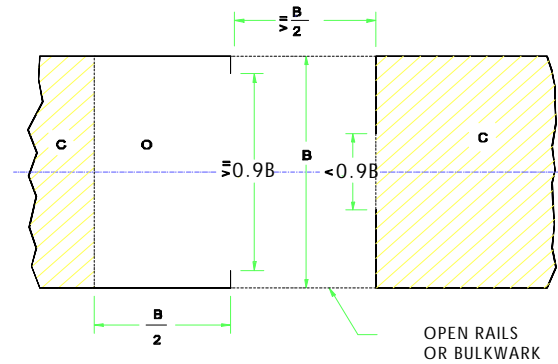


Fig. 5

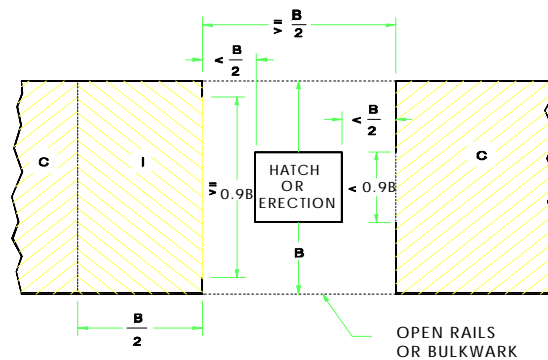
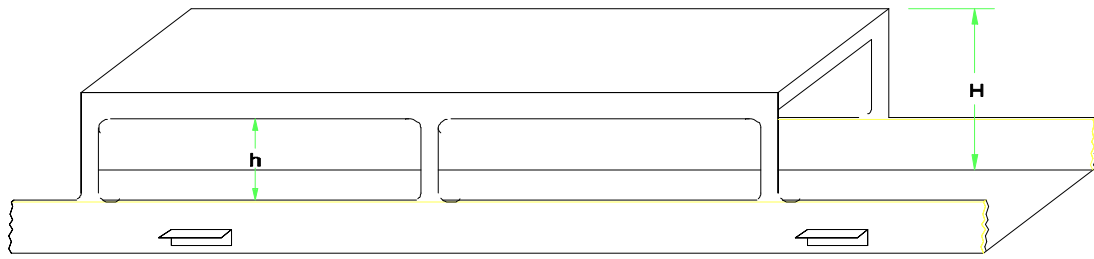


Fig. 6

2. A space under an overhead deck covering open to the sea and weather, having no other connection on the exposed sides with the body of the vessel than the stanchions necessary for its support. In such a space, open rails or a bulwark and curtain plate may be fitted or stanchions fitted at the vessel's side, provided that the distance between the top of the rails or the bulwark

and the curtain plate is not less than 0.75 meters (2.5 feet) or one-third of the height of the space, whichever is the greater. (Figure 7).



$h = \text{AT LEAST } \frac{H}{3}$
 0.75m (2.5 FEET)
 WHICHEVER IS
 THE GREATER

Fig. 7

3. A space in a side-to-side erection directly in way of opposite side openings not less in height than 0.75 meters (2.5 feet) or one-third of the height of the erection, whichever is the greater. If the opening in such an erection is provided on one side only, the space to be excluded from the volume of enclosed spaces shall be limited inboard from the opening to a maximum of one-half of the breadth of the deck in way of the opening (Figure 8).

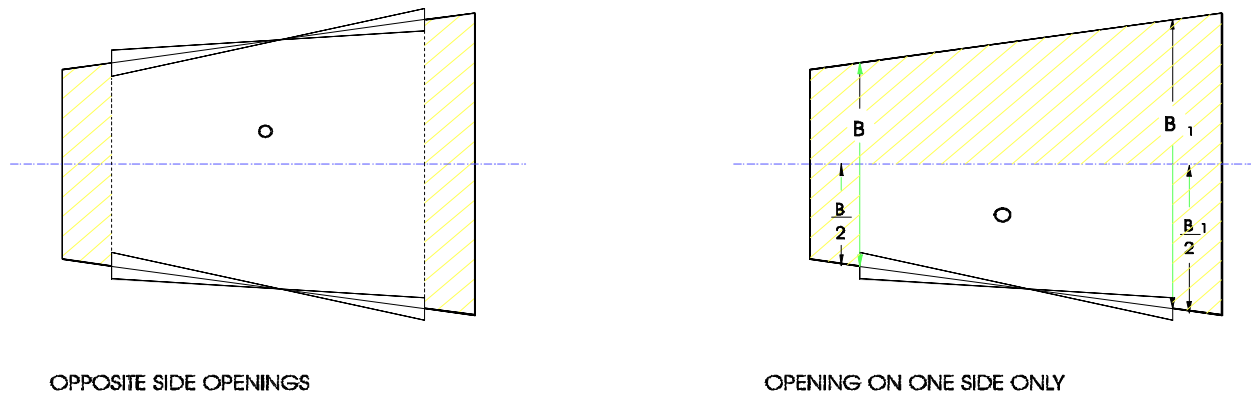
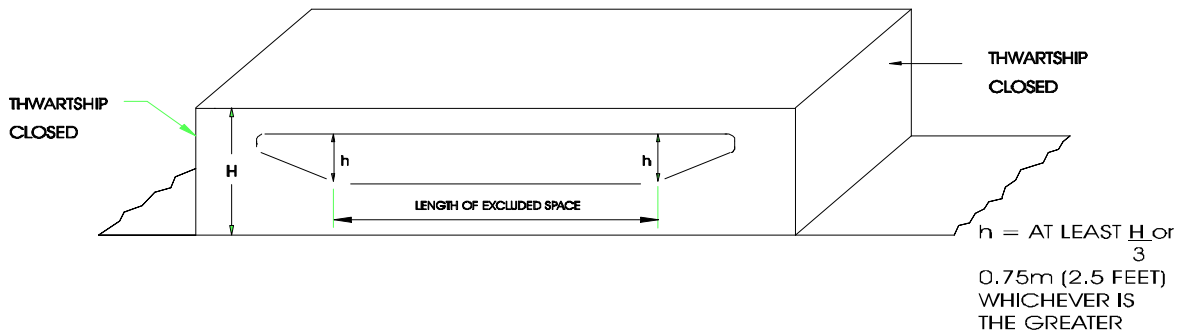


Fig. 8

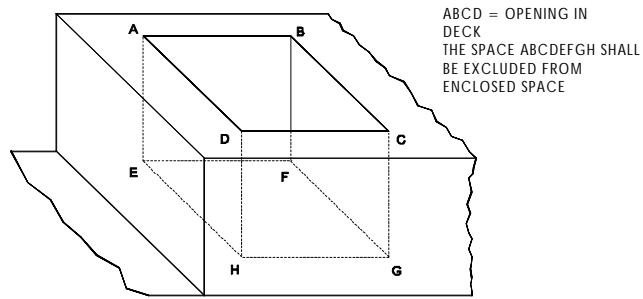


Fig. 9

4. A space in an erection immediately below an uncovered opening in the deck overhead, provided that such an opening is exposed to the weather and the space excluded from enclosed spaces is limited to the area of the opening. (Figure 9).

5. A recess in the boundary bulkhead of an erection which is exposed to the weather and the opening of which extends from deck to deck without means of closing, provided that the interior width is not greater than the width at the entrance and its extension into the erection is not greater than twice the width of its entrance. (Figure 10).

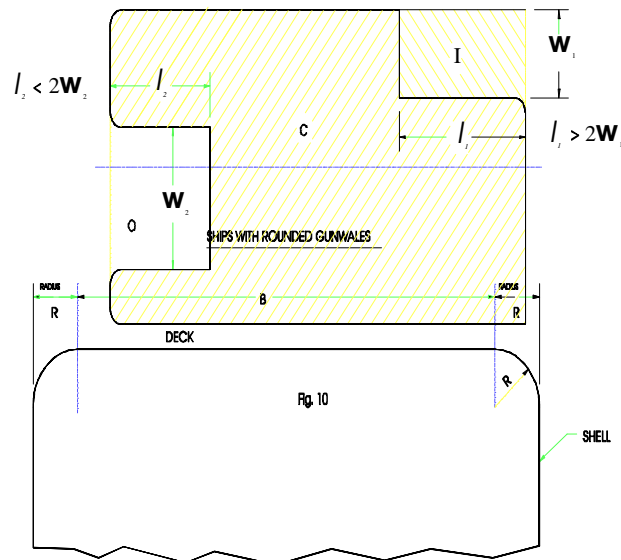


Fig. 11

D. EXPANSION OF THE UPPER DECK:

In a vessel having a stepped upper deck, the lowest line of the exposed deck and the continuation of that line parallel to the upper section of the deck is taken as the upper deck.

E. DETERMINATION OF THE PC NET TONNAGE IN ACCORDANCE WITH THE UMS:

Explanation of the components of the formula used:

PC/UMS Net Tonnage = $K_4(V) + K_5(V) + CF_1 (VMC)$, in which formula:

(a) $K_4 = \{0.25 + [0.01 \times \text{Log}_{10}(V)]\} \times 0.830$

(b) $K_5 = [\text{Log}_{10}(\text{DA}-19)] / \{[\text{Log}_{10}(\text{DA}-16)] \times 17\}$.

If the number of passengers ($N_1 + N_2$) is greater than 100 or DA is equal to or less than 20.0 meters then K_5 is equal to zero.

(c) V = Total volume of all enclosed spaces of the vessel in cubic meters and is identical to V as specified in the 1969 International Convention on Tonnage Measurement of Vessels.

(d) DA (Average depth) = The result of the division of the V by the product of the length in meters multiplied by the moulded breadth in meters. $DA = V / (L \times MB)$.

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

(f) MB = *Moulded breadth* is defined in numeral (3), article 2, section 2 of this chapter.

(g) N_1 = number of passengers in cabins with not more than 8 berths.

(h) N_2 = number of other passengers.

(i) $N_1 + N_2$ = total number of passengers the vessel is permitted to carry as indicated in the vessel's passenger certificate.

(j) $CF_1 = 0.031$ for vessels which the Authority determines are designed to carry containers on or above the upper deck; otherwise " $CF_1 = 0$ ". In making the foregoing determination, the Authority may consider documentation provided by such officials as are authorized by national governments to undertake surveys and issue national tonnage certificates.

(k) *VMC* means the volume (in cubic meters) of the maximum capacity of the containers that can be carried on or above the upper deck. This volume can be calculated by multiplying the maximum number of containers by 29.2 m³ or by other generally accepted methods that meet the Authority's accuracy standards. The *volume of the maximum capacity* (*VMC*) will not include any other container capacity that is included in *V*.

F. CHANGE IN THE PC/UMS NET TONNAGE:

The Authority shall perform a fair and equitable volumetric comparison where a vessel does not have total comparative volumes according to ITC 69, or other suitable source of volumetric comparison, to determine if the vessel's structure has undergone a significant change.

G. MEASUREMENT OF VESSELS WHEN TONNAGE CANNOT BE OTHERWISE ASCERTAINED:

Explanation of the components of the formula:

The formula: $UDV = \{0.91 \times [(LOA \times MB) \times (D - SLD)]\} + (SLDISP/1.025)$

Where:

UDV = *V* of all enclosed spaces below the upper deck in cubic meters.

LOA = The Length overall, i.e., the length of the vessel in meters from the foremost to the aftermost points, including a bulbous bow if present.

MB = Moulded breadth in meters as defined in article 2.

D = Moulded depth in meters as defined in article 2.

SLD = Summer loaded draft (in meters) i.e., the maximum depth to which the vessel's hull may be immersed when in a summer zone.

SLDISP = Summer loaded displacement, i.e., the actual weight in metric tons of the water displaced by the vessel when immersed to her SLD.”