International Tonnage Convention, 1969

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Tonnage (1)

• The concept of tonnage was first introduced by to define a measurement of a ship size to be used as a basis for taxes, port and harbor fees
• Until the 17th century, the tonnage was determined based on the following expression:

\[ \frac{L \times B \times D}{100} \]

- L - Length of the ship [ft]
- B - Maximum beam [ft]
- D - Maximum depth of the hold below the main deck [ft]
Tonnage (2)

- A British Act of Parliament from 1773 adopted the following formula designated by Builders Old Measurement (BOM) to compute the tonnage:

\[
\frac{(L - \frac{2}{5}B) \times B \times \frac{1}{2}B}{94}
\]

Tonnage [ton]
- L - Length of the ship measured along the rabbet of the keel, from the fore side of the stem beneath the bowsprit to the after side of the sternpost [ft]
- B - Maximum beam [ft]

- This formula remained in force until the mid 19th century, when the introduction of iron as a shipbuilding material and steam as a means of propulsion resulted in the design of ships with longer and thinner lines

International Tonnage Convention

Application
- Ships engaged in international voyages

Exceptions
- War ships
- Ships with L < 24 m

Entry into Force
- 18th July 1982
Some Definitions

- **Tonnage**, is a measure of the enclosed spaces of the ship measured on the mold lines (linhas de traçado), often used in the commercial and tax applications.

- **Gross Tonnage**, is a measure of the total enclosed spaces of the ship.

- **Net Tonnage**, is a measure of the spaces useful for the carriage of cargo or of passengers.

- **Tonne**, is the unit that was used to express the tonnage before the entry into force of the Convention of 1969. Also designated by Moorson tonne, represents the volume equivalent to 100 ft³ (2.832 m³).

Gross/Net Tonnage

- The Gross Tonnage reflects the size of the ship
- The Net Tonnage reflects the capacity of the ship to generate revenue
**Gross Tonnage**

The gross tonnage is computed by the expression

\[ GT = K_1 V \]

where:
- \( V \) - total volume of all the enclosed spaces of the ship [m³]
- \( K_1 = 0.2 + 0.02 \log_{10} V \)

**Net Tonnage**

The net tonnage is obtained by the expression

\[ NT = K_2 V \left( \frac{4d}{3D} \right)^2 + K_3 \left( N_1 + \frac{N_2}{10} \right) \]

where:
- \( V_c \) - total volume of the cargo spaces [m³]
- \( K_2 = 0.2 + 0.02 \log_{10} V_c \)
- \( K_3 = 1.25 \left( \frac{GT + 10000}{10000} \right) \)
- \( D \) - molded construction depth, amidships [m]
- \( d \) - molded mean draught, amidships, at the Summer load line [m]
- \( N_1 \) - number of passengers in cabins not having more than 8 berths
- \( N_2 \) - number of passengers not included in \( N_1 \)
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Notes

• The tonnage has become a non dimensional value and not expressed in Moorsom tons (100 ft³) as previous practice, dating back from 1860
• The volumes considered are measured on the mould lines and therefore can be computed based on drawings
• The net tonnage is a function of the number of passengers, the number of crew members is not taken into consideration.

Shelter Deck Ships

• Concept of ship for general cargo that was developed to take advantage of the tonnage definition prior to the Convention of 1969
• These ships had a light deck above the main deck, continuous from stern to stem and provided with at least one opening (Open Shelter Deck) or without openings (Closed Shelter Deck)
• The objective was to increase the cargo capacity without raising the tonnage
• The most well known ship of this type is the Ship SD14 (Shelter Deck 14,000 t)
General Cargo Ship SD 14

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