TECHNICAL TERMS

Below explanations of terms frequently used in our web-site. The explanations are much simplified to make it understandable to all readers. If more in depth information is required, then corresponding technical books etc. must be consulted.

Numbers:

LR-Number In the old days, when Great Britain was the leading ship builder and shipping nation, the Lloyd's Register had the only comprehensive list of ships worldwide, each ship had its own, distinctive number

IMO-Number In the year 1987 the IMO (International Maritime Organisation, a subsidiary organisation of the UNO, regulating the shipping industry) adopted Resolution A.600(15), to assign to each ship a "ship identification number". This became mandatory in 1996 and LR was assigned to continue to register and issue now the "IMO-number". Today the IMO-No. are assigned by IHS-Maritime, a subsidiary of Fairplay and Lloyds Register.

The IMO-No. of a ship remains from construction until demolition always the same, regardless of change of name, flag and/or ownership

The IMO-Number has to be displayed permanently on the stern and normally in way of the bridge.





Under the ship's name and homeport on the stern, today you have also the IMO-number (Photos: M. Eichmann)

Official Number

The number is assigned by the various national ship's registries. These numbers differ from country to country. In Switzerland a consecutive number,

		from 1 is used, today reached 214 (April 2015) and Malta now has d the IMO-No. as their official number.		
interna The fir Telecc Switze allocat ship fo		I sign is a sequence of four to seven letters and numbers for the cional identification of a radio station on board a ship or aircraft. It two digits are distributed by the ITU in Geneva (International mmunications Union) to the states in one or more groups. For land stands HB as the ITU-prefix. The remaining two letters are ed by the Swiss Maritime Navigation Office in Basel. A Swiss example has a call sign HBXY, meaning HB for Switzerland to identify the ship.		
	coastal waves,	om Broadcast operates on behalf of the Swiss Government the radio station Bernradio (HEB) for radio communication by short thereby ensuring continued radio communication between ships itzerland, even if satellite communications would break down.		
	sign sta	ations, for example St. Vincent and the Grenadines have a call arting with J8A to J8Z, consisting of an alphanumerical group o seven digits.		
Tonnage:				
the vol		Register Tons, has nothing to do with weight, but is a measure of ume of the entire ship, including superstructure. In the old days RT was 100 cubic feet, or 2,8 m3.		
	With the "International Convention on Tonnage Measuremer 1969" the procedures were simplified and since 1982 the GT Tons are in force. Again it measures the volume of the ship, then the figure is multiplied by factor reflecting the type of sh German language GT is called BRZ (Bruttoraumzahl). Before the "International Convention on Tonnage Measurem Ships 1969" was adopted, each country had its own tonnage therefore tonnage used to change, when a ship was sold from country to another.			
NRT / NT	The volume of the "freight earning compartments", such as cargo holds or cargo tanks. In German the NRZ (Nettoraumzahl). GT and NT are used to calculate various fees and taxes.			
Open shelter decker (OSD)		This is an old tonnage class, given to the tweendeck cargo vessels. A vessel could have dual tonnage, open shelter decker and closed shelter decker. OSD was used for ships carrying low weight, but high volume cargoes, i.e. general cargo. With this tonnage, less deadweight and less draft was allowed, but also less harbour dues had to be paid.		
Closed shelter decker (CSD)		Contrary to above, the CSD could load more cargo and had a deeper draft, but also higher harbour dues had to be paid. This tonnage was suitable for heavy cargoes, i.e. grain, ore etc.		
		Many ships were measured for both OSD and CSD. Certainly older seafarers remember the "tonnage hatch". For the tonnage measurement, the tween deck was considered as "main deck"		

	and the main deck was considered as a "shelter". To maintain this fiction, the "tonnage hatch" was used, as it could not be permanently closed. Also "tonnage passage ways" were used alongside the engine casings. With these tricks, the tween deck became the main deck and the tonnage was reduced accordingly. Alternatively, when the "tonnage hatch" and the "tonnage passage ways" were made watertight and permanently closed, then the ship became a closed shelter decker.
Displacement	The floating ship displaces an amount of water corresponding to its own weight (law of Archimedes). The displacement varies when the ship is loaded or discharged. Today given in metric tonnes, but in the old days frequently long tons (It = 1016 kg) were used.
Light weight	The weight in tonnes of the empty ship with all the machinery and fixed equipment on board. This figure is important, once the vessel is sold for demolition.
DWT	Dead Weight tonnes is the carrying capacity of the ship on its load line marks. It comprises the weight of cargo, bunkers, fresh water, stores and crew. For example, if a long voyage is undertaken, less cargo can be carried, because more bunkers are necessary and vice versa
	Note: Lightweight + Deadweight = Displacement
DWT-scale	The shipbuilder prepares a list giving the displacement and the dead

DWT-scale The shipbuilder prepares a list giving the displacement and the dead weight for each 1 dm (10 cm) or 1 foot, the so called "dead weight scale". This scale usually is incorporated in the "capacity plan" but can be drawn up separately.

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In this loading plan (capacity plan) the "deadweight scale" is located in the left, upper corner.

From left, the draft in feet, then the deadweight in saltwater, then in freshwater. On the right the tonnes, which can be loaded per one inch additional immersion on the corresponding draft (TPI = Tonnes per Inch).

Load-line marks The load-line marks or "plimsoll-marks" were introduced by Samuel Plimsoll (1824 - 1898), a British MP, who pushed in 1876 a bill through parliament, which resulted in the Merchant Shipping Act. The idea was to prevent overloading of the ships and to have sufficient freeboard.

The load-line marks are assigned by a classification society and are marked permanently by welding mid ships on each side, whereas draft marks are placed on the stem, mid ships and on the stern.



Above the load-line and draft marks of a cargo vessel, BV denotes the class society assigning the load-line, in our case Bureau Veritas, Paris. S means summer line, W = winter and T = tropical, F = fresh water, TF = tropical fresh water

You see, in winter less can be loaded then in summer or in the tropics.

The DWT of a vessel usually is denominated as DWT on summer line. F and TF is the freshwater allowance (freshwater / tropical freshwater). Due to the difference of the density, a ship coming from the sea into freshwater (for example into a river) will go deeper down and vice versa. When Loading in a tropical river to the mark TF, the vessel will be lifted to mark T, when reaching the sea. In this way it will remain within the legal limit.

Load line zones The seas and the oceans of the world are divided into various zones, i.e. the tropical zone, the summer zone and the winter zone. Some zones change according to the seasons. Ships have to be loaded in such a way, as to maintain the prescribed draft in any zones during a voyage, see below chart.



Chart of the worldwide "Load line Zones" (By courtesy of http://www.maritimesun.com/news/wp-content/uploads/2012/02/WORLD-LOADLINE-AND-INTERNATIONAL-TIME-ZONES.jpg)

Container:

TEU	TEU = Twenty Foot Equivalent Unit means a container of a length of 20 feet (6,06 m long x 2,44 m wide x 2,59 m high) and a total weight of 24 mt. Note, there are many differing containers, here we have given only the basic container unit.			
	Capacity of container ships are usually given in TEU.			
FEU	FEU = Forty Foot Equivalent Unit, a container of 40 feet length (12.19 m long x 2,44 m wide x 2,59 m high). Note, an articulated lorry normally carries 2 TEU or 1 FEU			
Engine power:				
HP	Horse Power: The term "Horse Power" goes back to James Watt in the 18th. century, who first defined and introduced a measure for power. Today the more scientific term "Kilo watt" is used (kW):			
	1 HP = 0,736 kW 1 kW = 1,36 HP			
ВНР	Brake Horse Power: The power measured on the test bed, using a water brake or a generator, giving the power at the output shaft of the engine.			
IHP	Indicated Horse Power: A theoretical figure, when measuring the steam or the gas pressure in a			

	cylinder to calculate the engine power. It does not take the internal friction of the engine into account.
NHP	Nominal Horse Power: An old unit, mainly used for steam engines. This formula is very theoretical, as it was about 3-4 times less, then the actual horse power. It was also used to calculate survey fees (to the delight of the ship owners).
Reciprocating steam engines	These were built mainly as compound engines, meaning steam was used in two or more stages.
	The most frequently used steam reciprocating engine was the triple expansion engine, using an HP, IP and LP cylinder (high, intermediate and low pressure). Sometimes also quadruple expansion engines were used.
Т-3	In the old LR-books T-3 stood for "Triple expansion steam engine".
Steam turbines	Usually a HP and LP-turbine was used with one astern turbine (note, a turbine cannot run astern).
Various:	
SWL	The load capacity of all lifting equipment used on board, is marked with SWL = Safe Working Load.
	For example: SWL = 5,0 tons

SwissShips, HPS, April 2015