

Loading, discharging and trim



Making up a stowage plan



Before the loading of the cargo commences a stowage plan must be made up to ensure the safety of the vessel, the cargo and the crew.



The background image shows a large cargo ship at sea. On the left side of the ship, there is a massive, high stack of yellow sacks, likely containing grain or similar bulk cargo. Several workers are visible on the deck, some standing on the sacks and others near the ship's structure. The ship's superstructure, including the bridge and various decks, is visible on the right side of the image. The water is a deep blue, and the sky is a lighter blue.

Making up a stowage plan

Considerations regarding safety of ship, cargo and crew

- . the stowage factor of the cargo
- . the trim of the vessel
- . sweating and intermixing (*segregation of cargoes*)
- . order of *destinations*.

The stowage factor



The stowage factor indicates the *volume* of the cargo hold *occupied* by one ton of cargo.

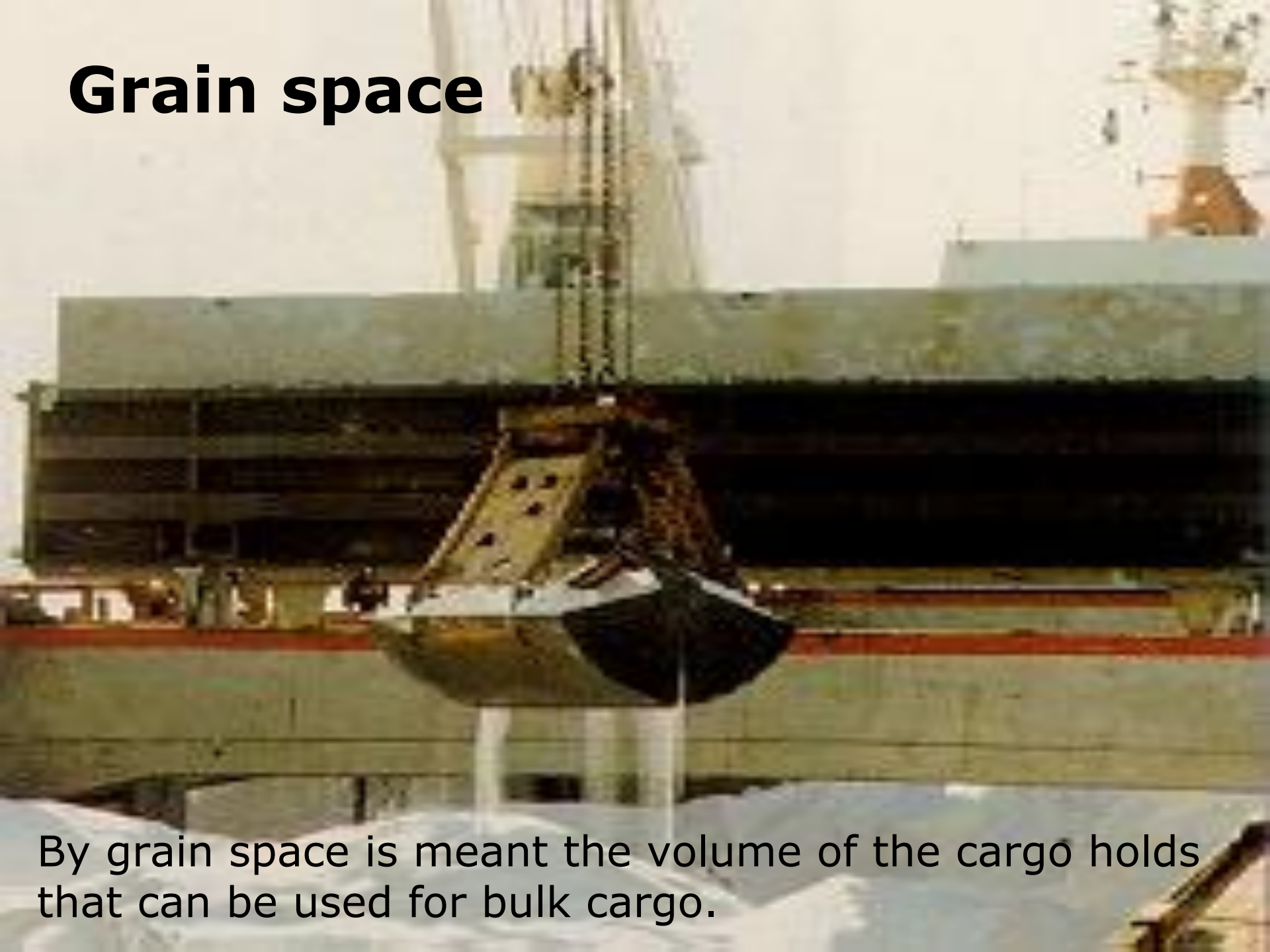


Bale space

By *bale space* is meant the volume of the cargo holds that can be used for *general cargo*.



Grain space



By grain space is meant the volume of the cargo holds that can be used for bulk cargo.

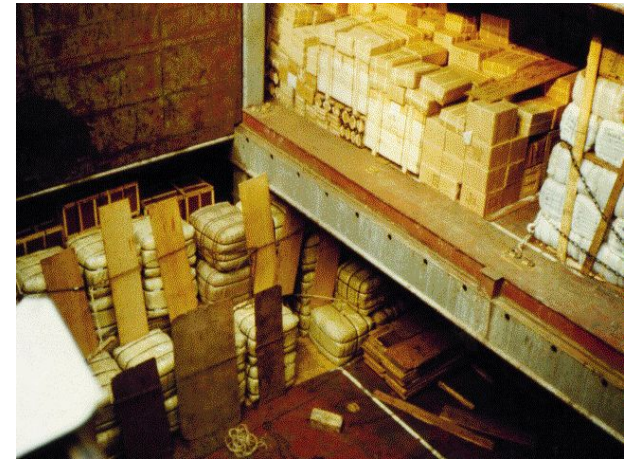
Oil space

Ullage – the free space above the liquid in a tank, measured in metres or feet.

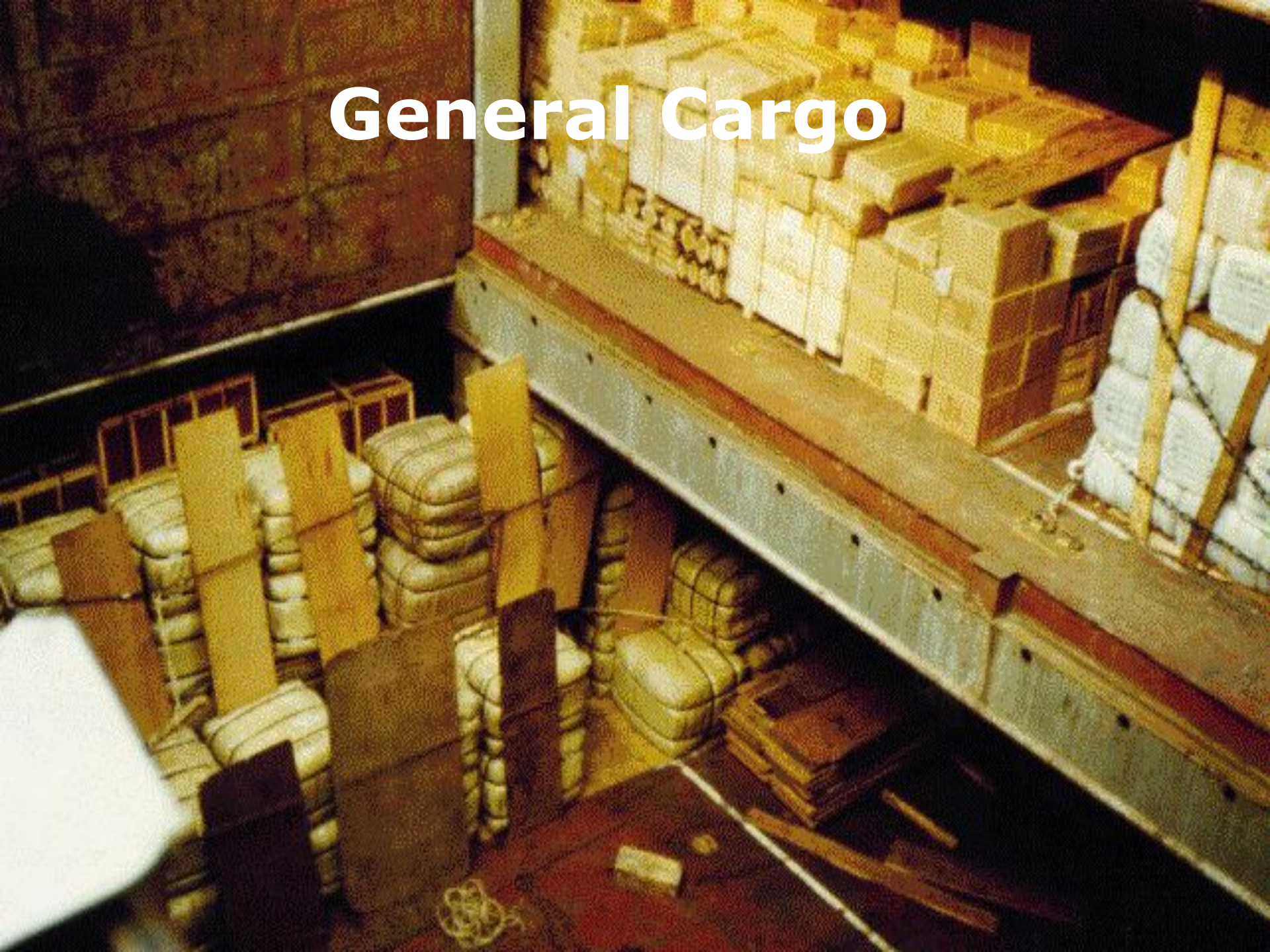


By Oil Space is understood 98% of the total volume of the tank.

Types of cargoes



General Cargo



General Cargo

General cargo is cargo coming in boxes, crates, bags and pieces.

The *stowage plan* will indicate where the various *cargo-items* have been stowed.



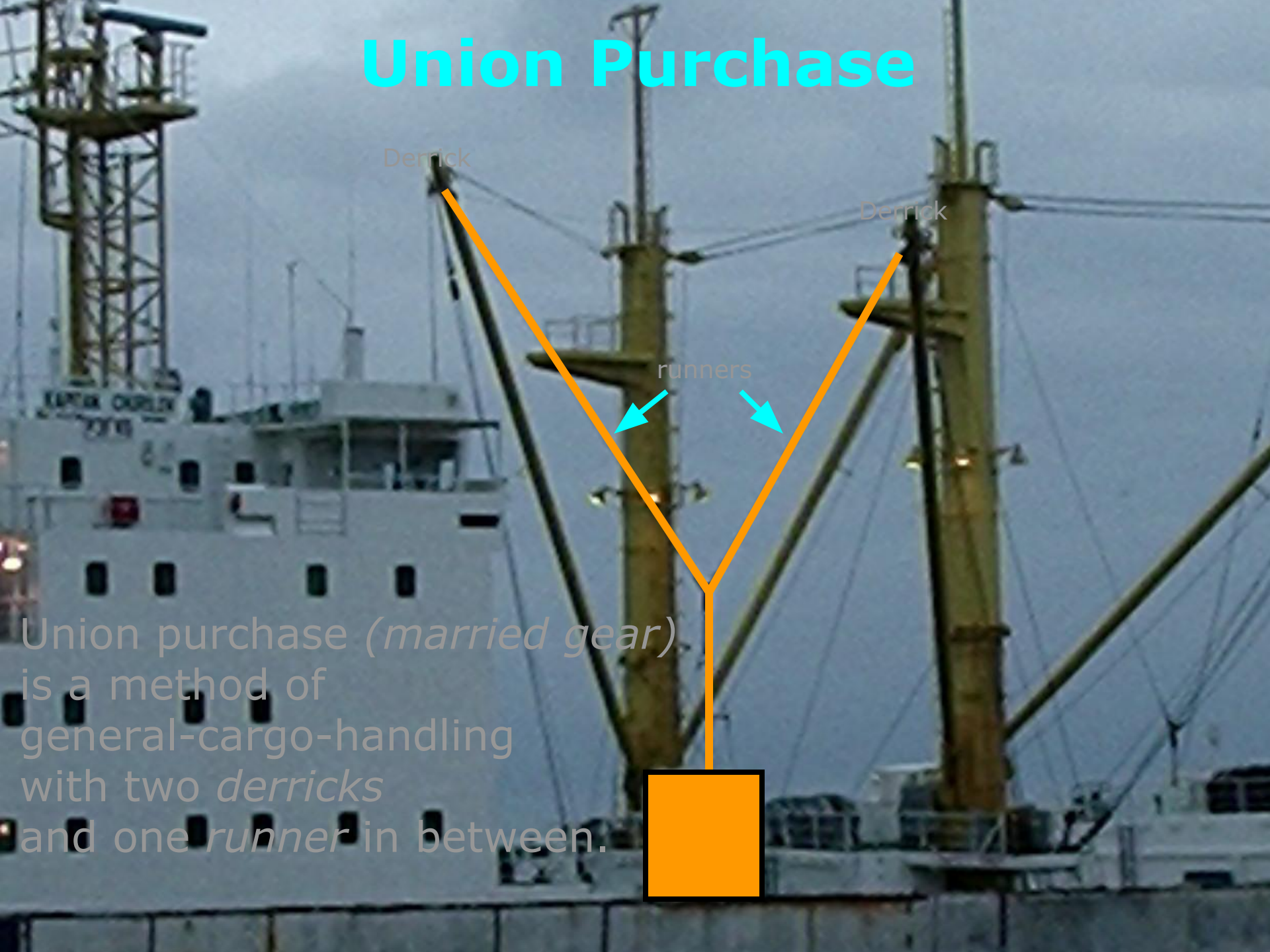
Union Purchase

Derrick

Derrick

runners

Union purchase (*married gear*) is a method of general-cargo-handling with two *derricks* and one *runner* in between.



THE HATCH



A hatch gives *access* to a hold.

Bulk cargo



Bulk cargo

Bulk carrier carrying sugar.



Crude oil carriers.



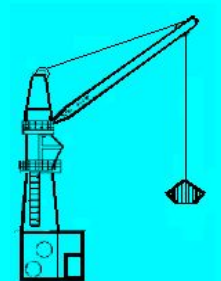
Bulk cargo is *unpacked cargo of one commodity*.
There is *dry bulk cargo* (grain, ore)
and *wet bulk cargo* (oil).



Wet bulk cargo
is loaded and discharged
by pumps.



Dry bulk cargo
is loaded and discharged
by cranes with grabs
or by pumps.



Containerized cargo

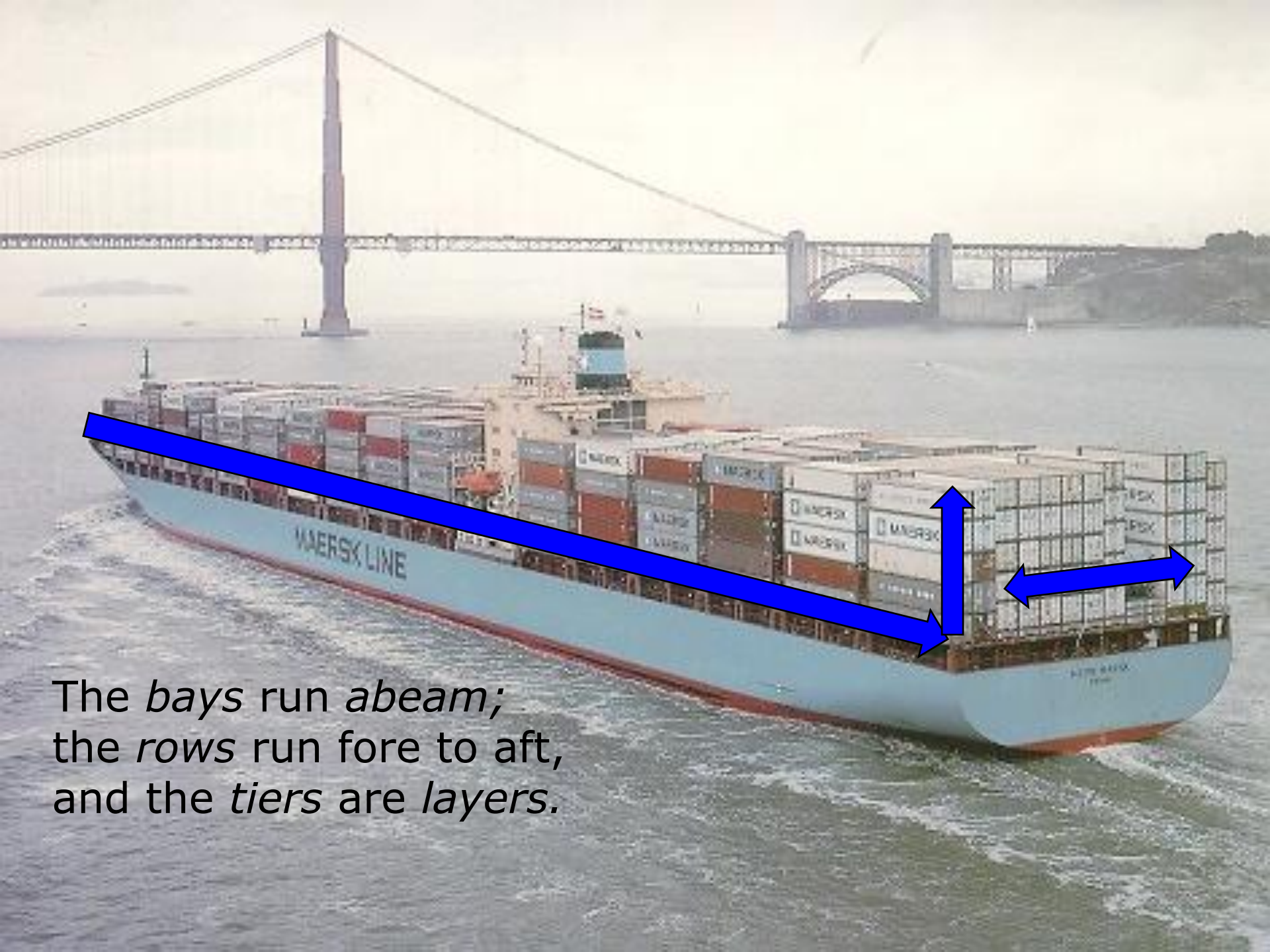




When things have gone wrong

Gantry Crane





The *bays* run *abeam*;
the *rows* run fore to aft,
and the *tiers* are *layers*.

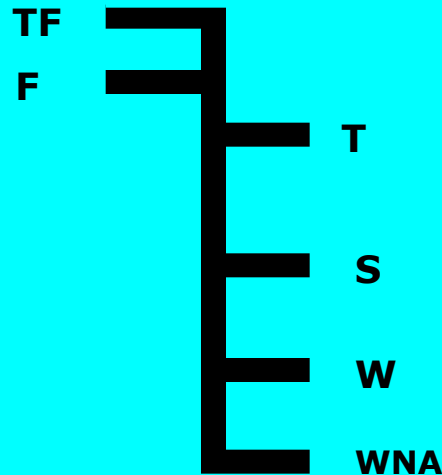
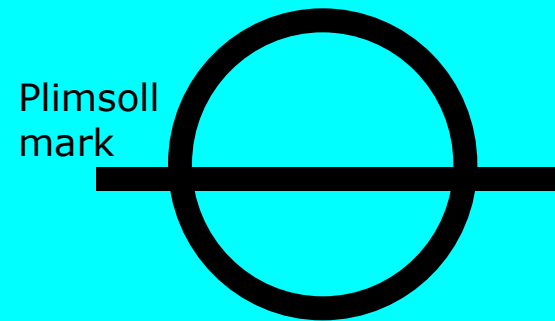
A high-angle, close-up photograph of a massive ocean wave. The wave's crest is a dark, turbulent green, with white foam and spray erupting from the top. The water below the crest is a deep blue-green, showing the texture of the moving water. The overall scene conveys the immense power and scale of the ocean.

Trim and Draft

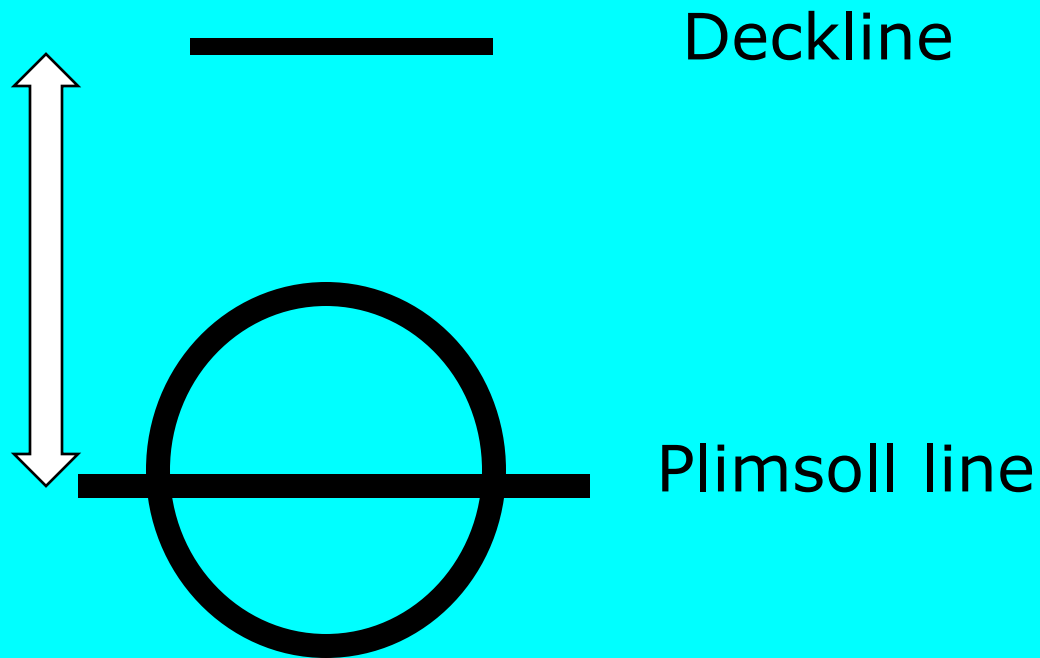
LOAD LINES

Lines that indicate the *greatest depth* to which the ship may be loaded under *various circumstances* and in *different seasons*.

Deckline 



PLIMSOLL MARK



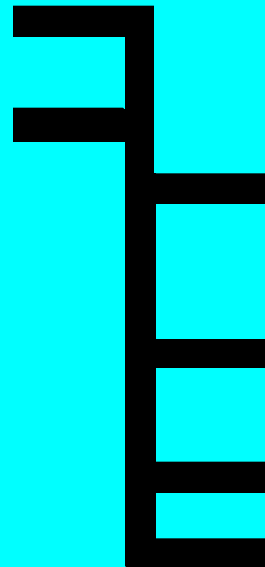
The distance between deckline and Plimsoll line indicates *Summer Freeboard*.

LOAD LINES

A load line indicates the depth to which the ship may be loaded in

Tropical fresh water

Fresh water



Tropical water

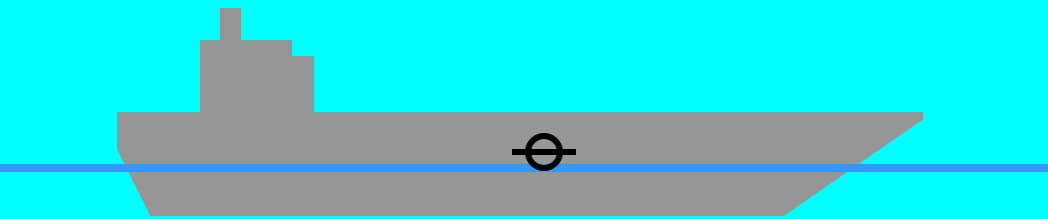
Summer

Winter

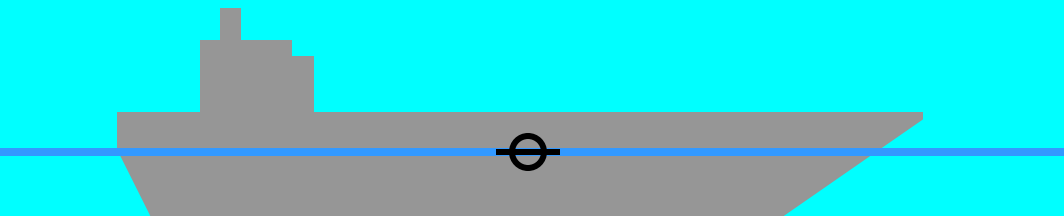
Winter North
Atlantic

DRAFT

Due to the *salinity* of sea water
draft in sea water
is less than draft
in fresh water



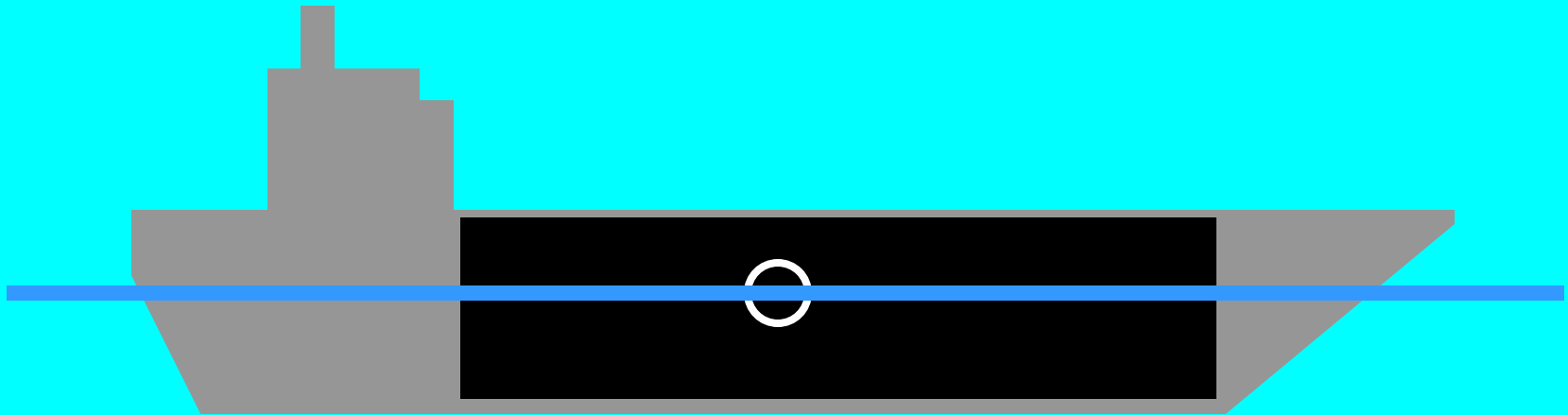
Sea-water draft



Fresh-water draft

Sea water has a higher
specific gravity than
fresh water.

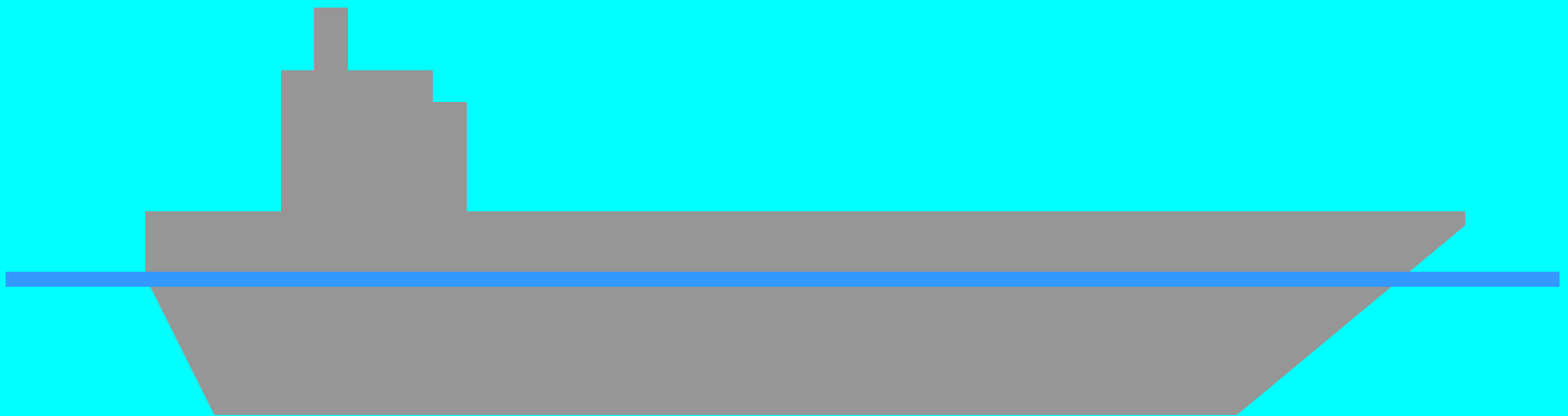
FULL AND DOWN



By "full and down" is meant that the vessel is *fully laden* and is floating on her load line.

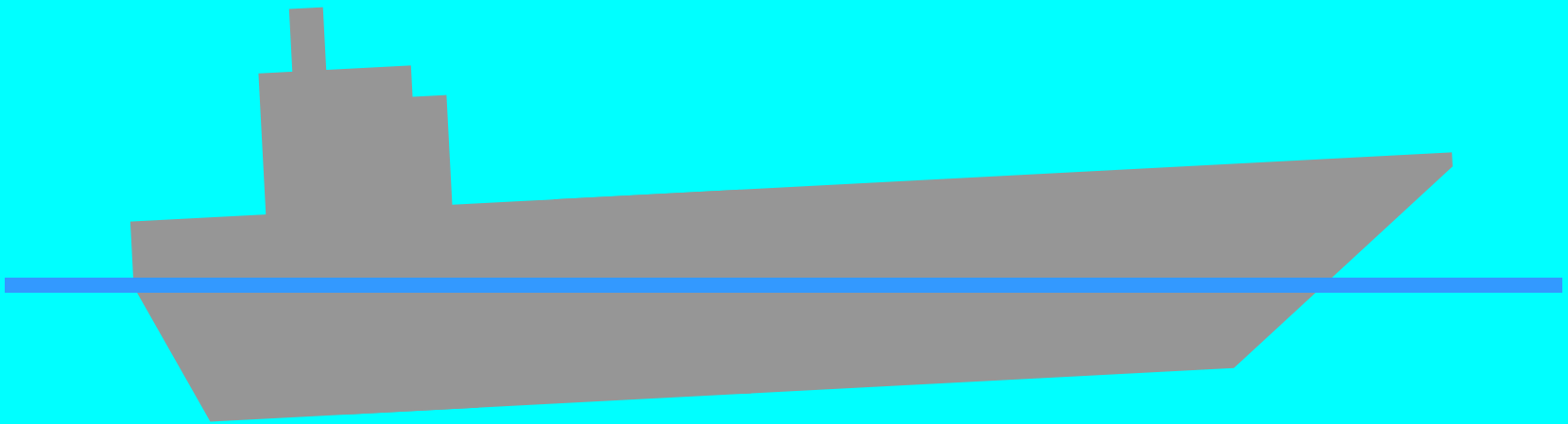
EVEN KEEL

When a vessel is floating on even keel, there is no difference between *draft fore* and *draft aft* (*"She is well trimmed"*).



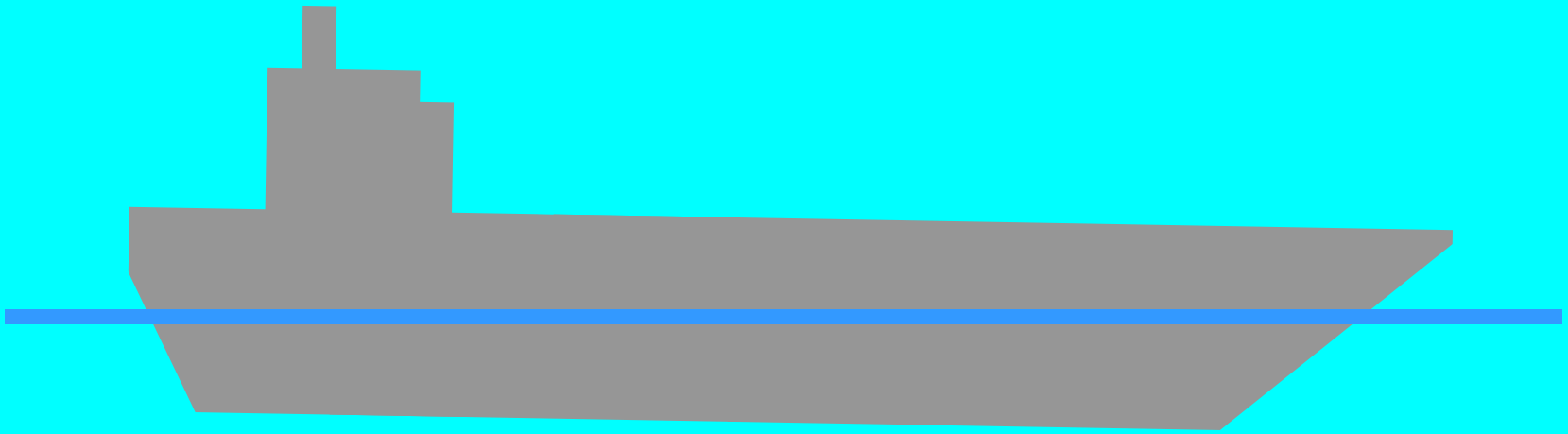
DOWN BY THE STERN

When draft aft is greater than draft fore she is *down by the stern* (*trimmed by the stern*).



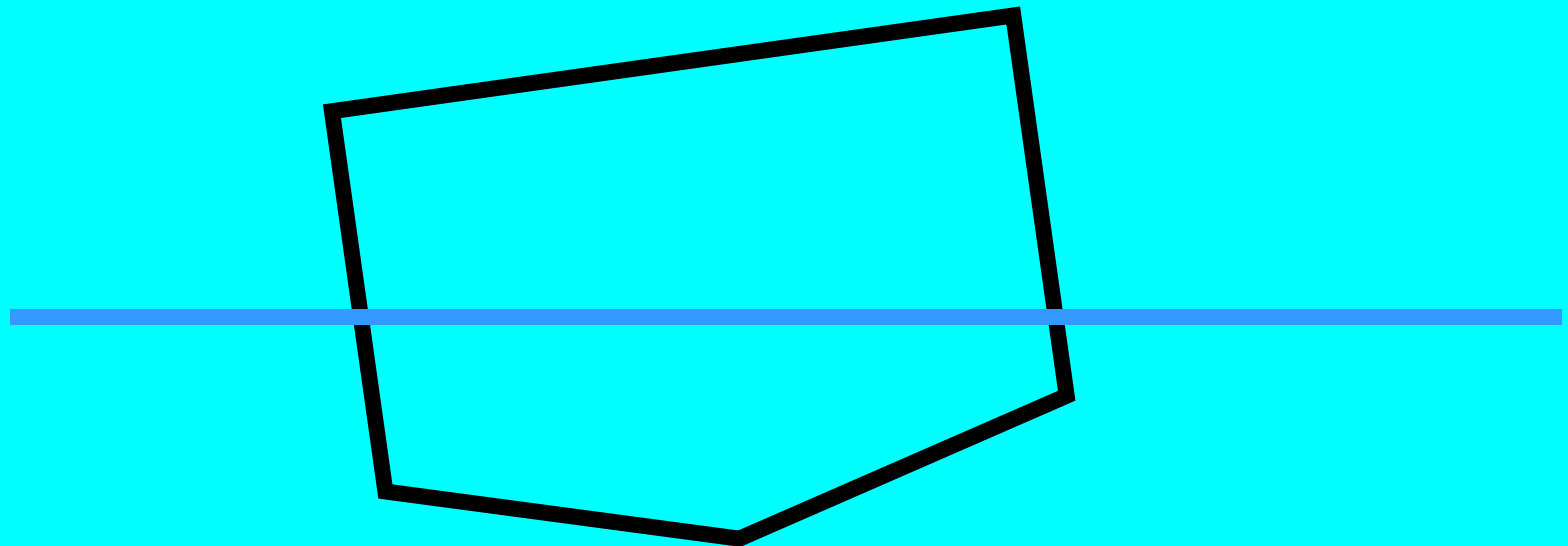
DOWN BY THE HEAD

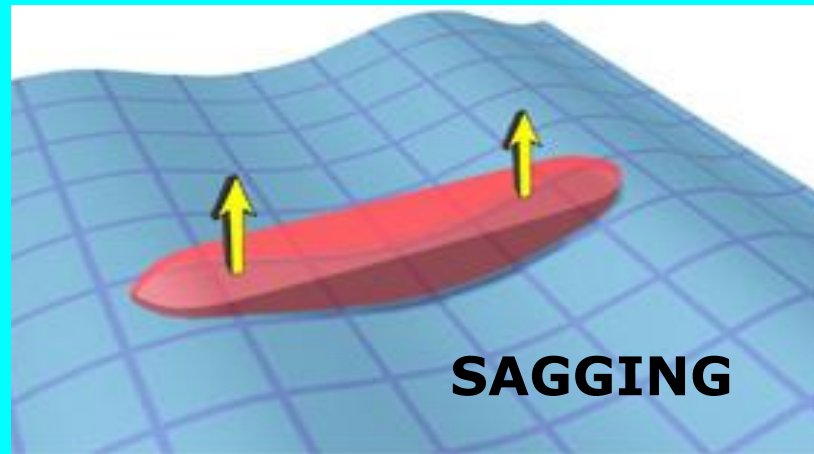
When draft fore is greater than draft aft she is *down by the head* (*trimmed by the head*).



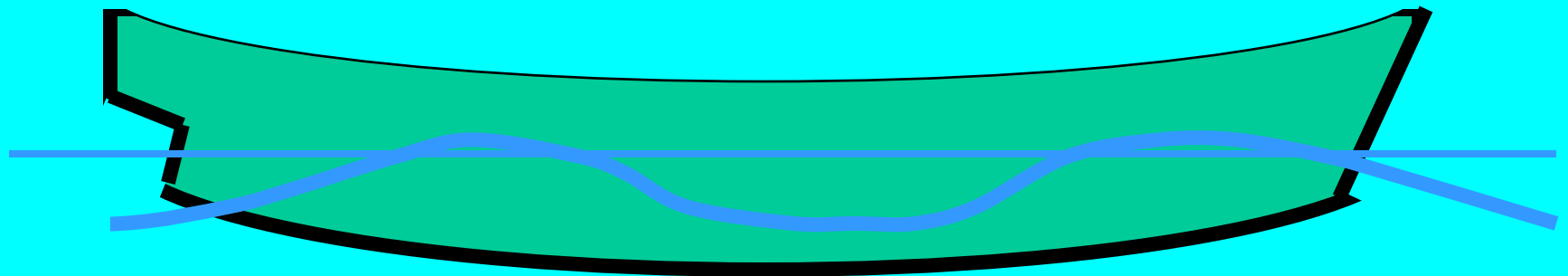
LIST (HEEL)

When starboard-draft is less than port-draft she has a *list to port*.





When draft amidships is greater than draft fore and aft the vessel is *sagging*.



HOGGING



The International Maritime Language Programme – IMLP

FINISHED

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