Types of Vessels

Generally speaking a *vessel* can be classified according to the *purpose* she serves.
The most common purposes are:
1) transportation of *cargo* or/and passengers;
2) assistance and service (by so called "special purpose vessels");
3) the catching of fish (fishermen);
4) peace keeping (warships).

Furthermore we can make the distinction between *sea-going vessels* and vessels for *coastal trade* and/or *inland waterways.*

1) Transportation

Liners and Tramps
Vessels that have been *designed* to transport cargo or/and passengers are called *merchant ships.*
They may be classified as *liners* or *tramps.*

A **liner** carries cargoes between two fixed *destinations.*
Her *sailing schedule* has been *prearranged* - she has a fixed *homeport*, *port of destination* and *port(s) of call,* and fixed *ETA's* and *ETD's* (Estimated Times of Arrival and Estimated Times of Departure). A liner-vessel is allowed to carry up to 12 passengers.

Freighters that carry cargoes *according to* schedules that are not fixed are called **tramps**.
Homeports, ports of destination, ports of call, ETA's and ETD's differ with every voyage.

Merchant ships may carry *general cargoes*, *bulk cargoes, refrigerated cargoes,* heavy cargoes, *timber,* and many many more.

General Cargo Ships
General cargo is cargo that has been packed in crates, boxes or bags, or cargo coming in pieces (unpacked *cargo items*).
Cargo is loaded and discharged by the vessel's own *derricks* or by *shore based cranes.*
The conventional general cargo ship has several *tweendecks,* so that the cargoes for the various destinations can be *reached* and discharged without having to *remove* cargo for other destinations first.
Under the *influence* of cargo-palletization the "open freighter" was fitted with two or even three *hatches* side by side.

General Cargo Ship

Both types of vessels, the general cargo ship and the open freighter, are becoming rather *obsolete,* since general cargo is more and more transported by vessels that have been designed to carry general cargo in containers.

Bulk Carriers

Bulk cargo is unpacked cargo of one *commodity.*

Dry bulk cargo, such as *grain, ore, fertilizers*, etc. is carried in specially designed vessels with holds that have been *divided* into compartments by *longitudinal* and *transverse separations,* so that the ship's stability will not be *affected* by a full cargo.

The holds of these ships are often constructed in such a way that they are self-trimming; this means that the *surface* of the cargo is constantly made *equal* by special pumps in *rolling circumstances* or when the vessel has a *list.*

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

Liquid cargoes such as *crude oil, petroleum, edible oils*, etc. are carried in tankers, for example in *Very Large Crude Carriers (VLCC's),* chemical tankers, such as Liquefied *Petroleum Gas tankers (LPG carriers)* or *Liquefied Natural Gas tankers (LNG carriers).*

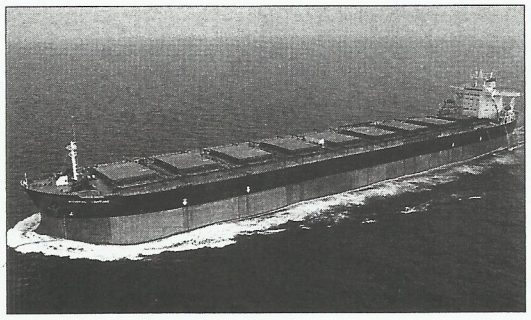
Product tankers are small tankers that carry different sorts of oils.

For safety reasons tankers must be fitted with double bottoms. These spaces also provide storage for fuel, lubricating oil and waters.

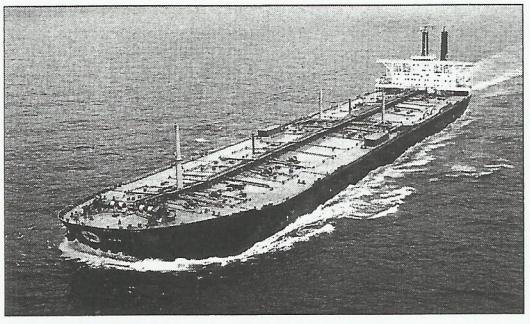
Tankers are divided into compartments by *longitudinal* and *transverse bulkheads.*

Cofferdams are empty spaces between the tanks and in the double bottom. They serve as separations to *prevent* liquids from leaking from one tank into the other.

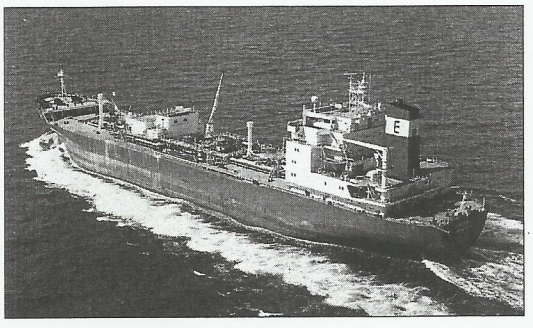
Cofferdams often serve as pump-rooms. Pumps for loading and discharging the cargo may be installed in these compartments. Tankers are often loaded and discharged *in the offing* by means of flexible pipes. This system of wet bulk handling *reduces* the number of *laydays.*



Dry Bulk Carrier



VLCC



LPG-Carrier

Container ships

Cargo that has been containerized is carried by container ships.

Containers are most often *measured* in Twenty Feet Equivalent Units *(TEU's)* and are *stowed* in a cellular arrangement in *Rows, Bays and Tiers.*

The rows run *abeam*, or *athwartship;* the bays run *fore to aft* and the tiers are horizontal *layers.* The *three-figure code* on each container *refers to* this stowage system. *Thus*, each container can easily be found.

Container ships are sometimes equipped with their own gantry cranes that load and discharge the containers. Container ships may carry general cargoes, liquid cargoes or *refrigerated cargoes.*

Bays, Rows and Tiers on a Container Ship

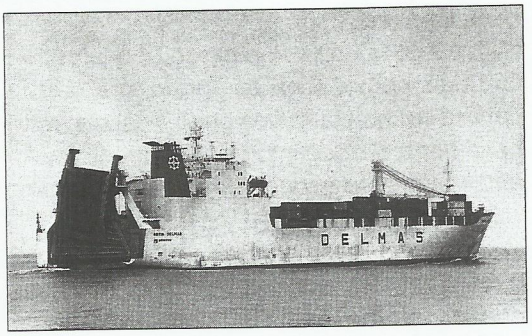
The advantages of carrying cargo in containers are: short lay time because of efficient and rapid cargo handling; few *stevedores* are *required;* less *pilferage* because the cargo has been *stored* in locked containers.

Roll-on / Roll-off ships (Ro / Ro ships)

On a Ro / Ro ship cargo is rolled on and rolled off by *lorries* or *trailers.*

The great advantage of this system is that no *cargo handling equipment* is required.

The loaded *vehicles* are driven aboard via *ramps* through special *stern* and *bow doors* and are properly *secured* for the passage. *Upon arrival* in the *port of discharge,* the vehicles are *released* and driven ashore to their destinations.



Ro / Ro ship

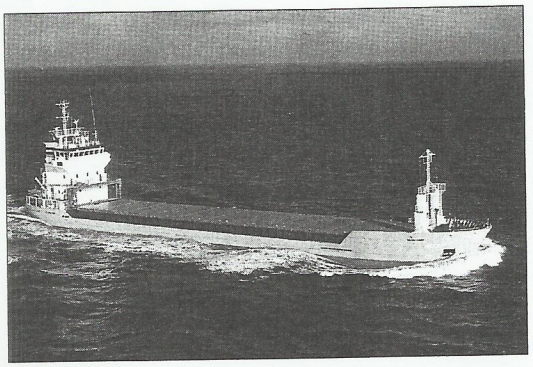
Coasters

A coaster carries cargo along the coast or on sea-voyages. Trans-Atlantic voyages are quite common.

A coaster is of *limited length* and tonnage.

Her engine room is situated *aft.* Often there are no tweendecks and the cargo spaces have no obstacles, so that a variety of cargo can be handled.

Hatches are very broad and cover most of the *main deck* surface. Because of her limited length she will hardly experience any problems related to longitudinal stresses. However, due to the broad *hatchways*, transverse *strengthenings* are necessary to *avoid* difficulties caused by transverse stresses.

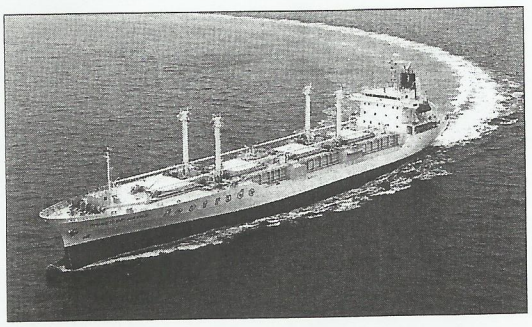


Coaster

Refrigerated-cargo vessels (Reefers)

Refrigerated-cargo vessels are ships that carry *perishable* cargoes, such as meat or fruit. These cargoes require cooling and must be stored in spaces that have precise temperature- and *humidity controls* during the voyage.

Reefers, as these ships are also called, are *equipped with refrigerating plants.*

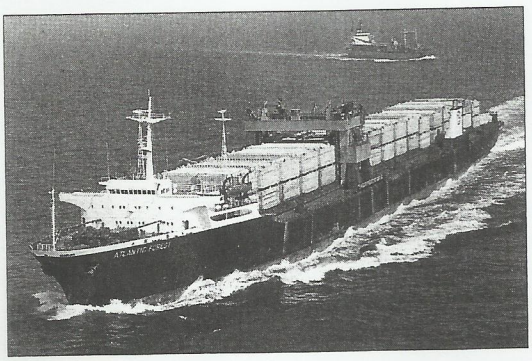


Reefer

Lash-vessels

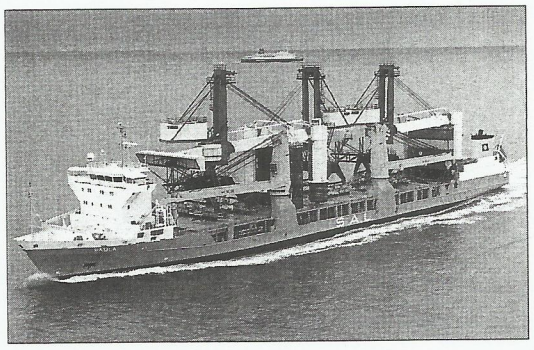
"*Lash*" stands for "Lighter Aboard Ship". A Lash-vessel has a main deck that is flat and without any obstacles. A lighter is a container that floats in the water. The containers may be hoisted on board by the vessel's own heavy derricks that stack them on board.

Another way of loading the containers on board is by submerging the vessel first (for this she must be equipped with a powerful pumping-system), then have tugs or push boats *tow* or push the lighters over the Lash-vessel, after which the vessel will emerge again and will "pick up" the lighters. This type of vessel is also referred to as a "Seabee".



Lash-vessels

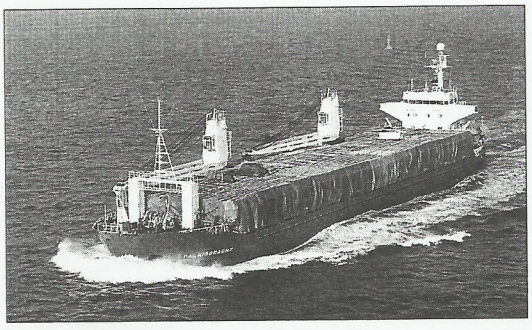
Heavy-load vessel



Heavy-load vessel

Heavy-load vessels have been designed to lift and carry extremely heavy cargo on the main deck.
Their most prominent *features* are very heavy derricks ("booms"), masts and lifting-blocks.
Their cargoes, such as drilling platforms, engines, yachts, trains, *derelicts* and *wrecks*, are loaded onto the main deck, which is flat and free from any obstacles.
A special way of loading and carrying heavy cargo is performed by *submerging* the ship and have the cargo-module float over it. She must be equipped with a powerful pumping-system.
After pumping the ship empty the vessel will *emerge* again and will pick up the cargo.

Timber Carriers



Timber carrier

Timber is a *raw material* from which wood-products are manufactured.
Vessels that carry timber can easily be *recognised* by their tall derricks.
A timber carrier has been designed in such a way that she can carry a tall deck cargo.
Her Plimsoll Mark is provided with a special timber *Load-line* that indicates the maximum *draft* to which she is allowed to be loaded under certain *circumstances* and in different *seasons.*

Multi-Purpose Vessels

Cargo ships that carry both general cargo, bulk cargo and containerised cargo are called multi-purpose (or *multi-loads*) vessels. These ships are equipped with a variety of cargo handling gears to load and discharge the different types of cargoes.
An OBO-ship has been designed to carry oil/bulk/ore. She has been subdivided in such a way that oil can be carried in the largest compartments and ore can be carried in the smaller compartments.

Passenger Ships

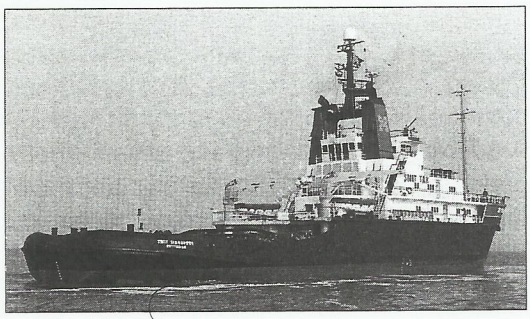
Cruise Ship

Passenger ships, such as cross-Channel ferries, have been designed to carry passengers and their vehicles on a prearranged route.
Their main features are more or less the same as the features of the Ro/Ro vessels.
Cruise ships have been especially designed to carry holidaymakers.

2) Assistance and Service

Vessels that *render* assistance and service have been designed to perform specific tasks, for example assisting other vessels, or providing special services to *navigation.*

A **tug** is a vessel that assists other vessels with *entering* or *leaving* the port, tows an oil rig to its position or assists with a salvage operation.
There are sea-going tugs and *harbour tugs.*
Their engines must be capable to *develop* enormous *powers.*
The largest and most powerful tugs are often fitted with *Controllable Pitch Propellers* (C.P.P.) that have *adjustable blades.*



Seagoing tug

Their manoeuvrability will be *enhanced* even more by *bow thrusters* and *stern thrusters.*
One of the main features is that the *aft deck* of a towing vessel is kept clear of all obstructions that may *interfere* with the towing-line.

A ***salvage vessel*** is a vessel that *rescues* other ships and their cargoes from loss at sea.
She must be equipped with heavy derricks to lift wrecks from the seabed.

A ***buoyage vessel*** places and maintains *buoys.* Her aft deck is flat and provides room to carry or haul in the buoys with her hoisting installation.

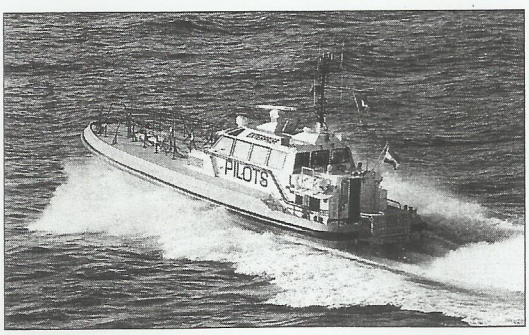
A ***survey vessel*** performs *marine research.* She is *equipped with* oceanographic instruments to carry out all kinds of *measurements* and *assessments.*

A **supply boat** supplies *oil rigs* with *stores, spare parts* and supplies for *domestic use.*
Her aft deck must be flat.
Additional duties may include the towing of rigs and *extinguishing fires,* for which they must be equipped with high-capacity fire-extinguishing pumps.

Supply boat

A **SAR-vessel** performs *Search and Rescue* when a ship is in *distress.* She must be capable to develop high speeds and must be equipped with the most modern communication equipment to *maintain* contact with Rescue Co-ordination Centres *(RCC).*

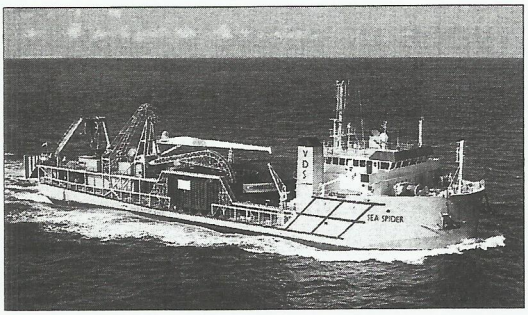
A ***Firefloat*** is a *fire fighting vessel.* She must have a powerful fire-extinguishing system on board.



Pilot tender

A ***pilot tender*** (or pilot launch) is a small boat that may be *launched* from the pilot boat.
The pilot will *embark* the ship that has *requested pilotage* from the pilot tender. She is often fitted with a *sheltered* aft deck to prevent the pilot from getting wet.

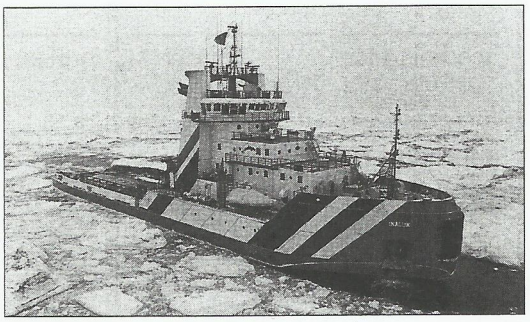
A **cable layer** lays cables on the bottom of the sea.
She is fitted with a huge horizontal wheel that *reels off* the cable.
This type of ship is often equipped with a Dynamic Positioning System to keep her in the
exact position when the *submarine cable* is reeled off.



Cable Layer

A **lightship** serves as a *beacon* for navigation and is *anchored* in the *vicinity* of crowded *channels* or seaways. She is usually not *self-propelled*, which means that she has to be towed to her position.

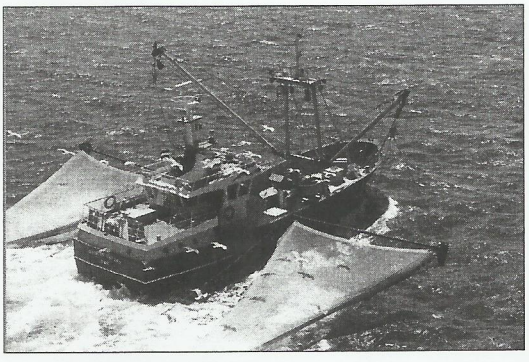
Icebreakers are designed to ride up the ice and crush a way through for other ships to follow.
This requires a powerful engine and a considerable strengthening of her *stem.*


Icebreaker

A **dredger** deepens out *harbours* and *ports*, *fairways*, *approaches* and *entrances*, inland waterways, *anchorages, roadsteads*, etc. *Spoil* is discharged into an *integrated* hopper or into a hopper that is *moored alongside.* To keep her in position she is often spudded.
There are bucket dredgers, grab dredgers (or backhoe dredgers) and suction dredgers with drag heads. A cutterhead is used to *disintegrate* rocky bottoms.

3) Fisherman

Large and modern fishing vessels (fishermen) are capable of catching and processing enormous quantities of fish. They may be underway for weeks before they return to their homeports.
Large refrigerating plants on board provide deep-freezing facilities. Before the fish are deep-frozen they are often stored in *RSW-tanks* (Refrigerated Sea Water Tanks). Powerful winches are used for hoisting the nets on board.


Fisherman

4) Man-of-war

Peace-keeping vessels (warships / men-of-war) are *measured* by weight, *contrary to* merchant ships, which are measured by volume. Warships must be capable to develop speeds of 25 knots and more, and must therefore be equipped with a high-power propulsion plant.

Man-of-War