

Unit III**A Guide to Maritime Infrastructure: Governing Bodies, Facilities, Personnel and Ships****Types of Merchant and Special-purpose Ships**

Skim and scan the presented texts, then compile the results and present them orally

A cargo ship is a vessel that carries cargo, goods and materials from one port to another.

Cargo ships are categorized partly by their capacity, partly by their weight and partly by their dimensions according to the various canals and canal locks through which they can pass.

At the same time other classification systems include:

- the number of hulls;
- the shape and size;
- the building materials used;
- the type of propulsion system used;
- the geographic origin of the vessel;
- the manufacturer, series, or class.

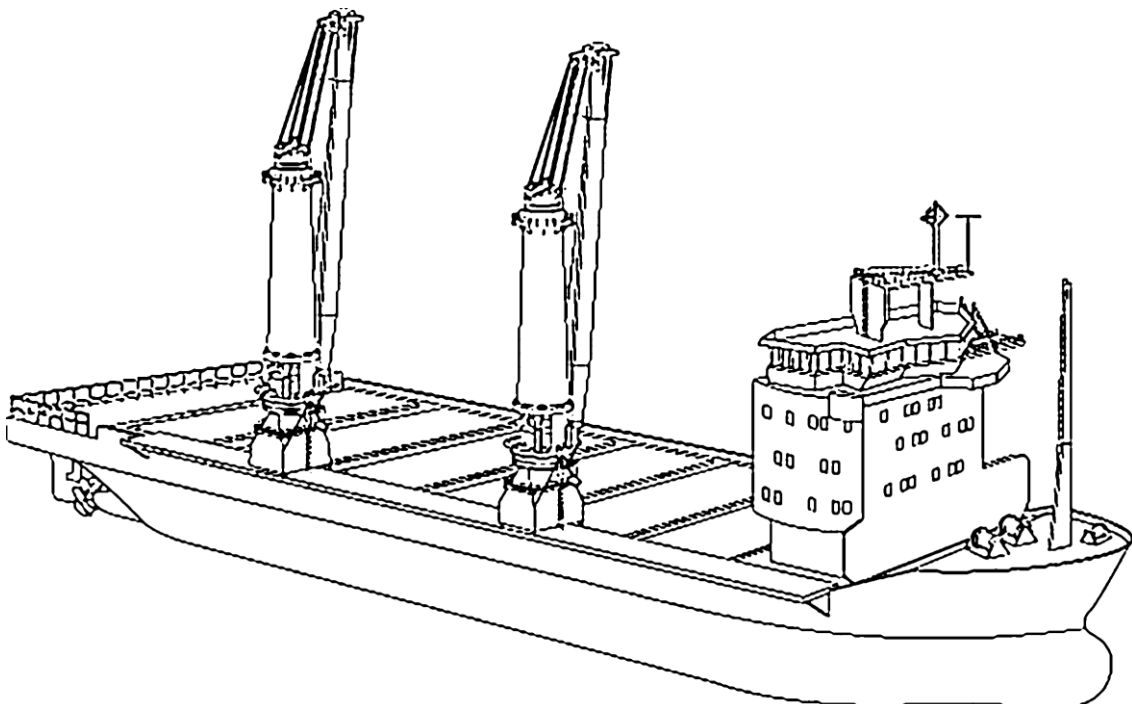
There are universal and specialized ships:

Universal ships (Combined Carriers) carry different types of both liquid and dry bulk cargoes, such as:

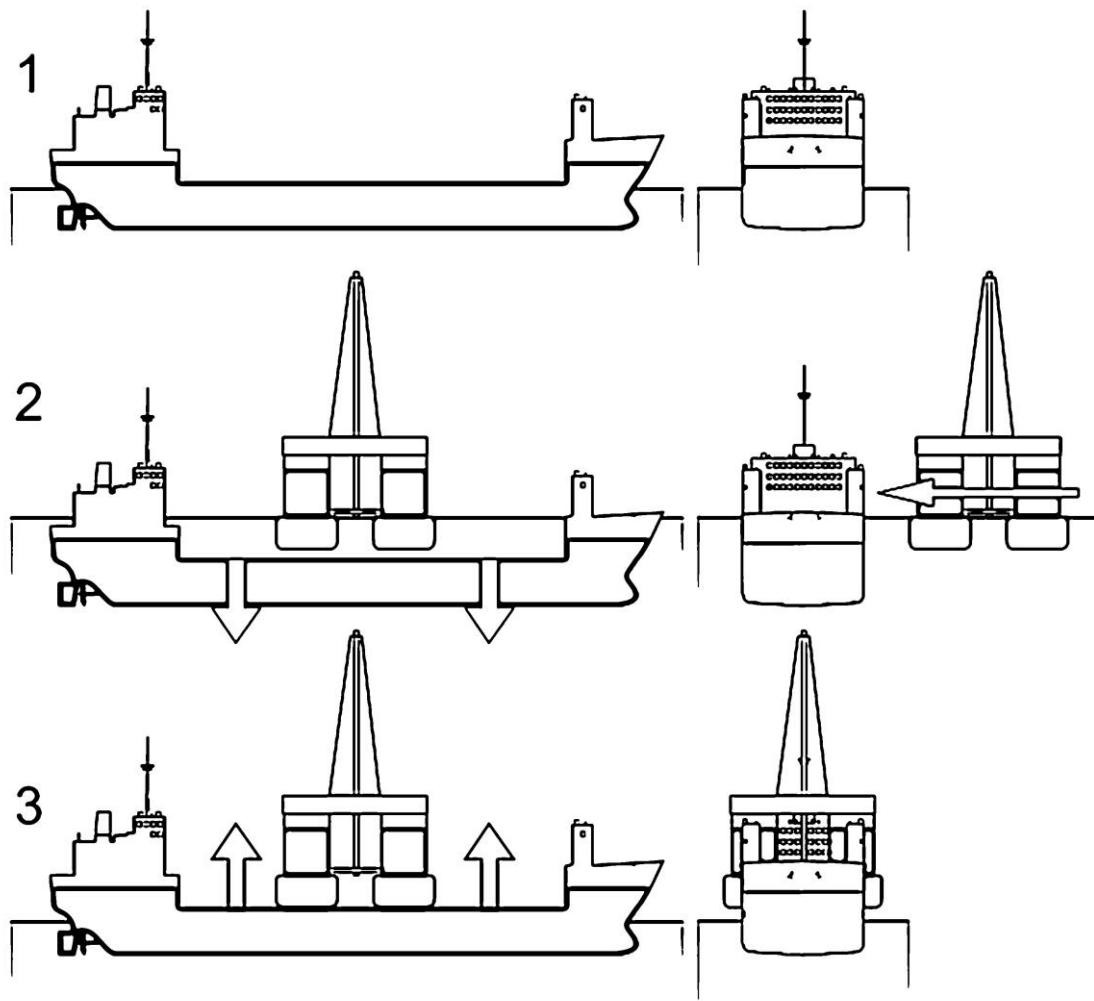
- **CONBULKERS - Container/Bulk-Carrier; Multi-purpose Container Ships** carry containers as well as general cargo.
- **OBO Ships** which carry a combination of ore, bulk and oil;
- **PROBO Ships** - product/oil/bulk/ore-carriers;
- **O/O Ships** are combinations of oil and ore carriers.
- **BIBO or Bulk In - Bags Out Bulk**ers are equipped to bag cargo as it is loaded. In one hour this ship can load and pack 300 tons of bulk sugar into 50 kg sacks.

The specialized ships carry one type of cargo and include:

- **Timber Carriers** - typically one-deck ships designed to carry logs;
- **Bulkers (Bulk-Carriers), Reefer Ships**, which transport cargo requiring temperature-controlled transportation, **Tankers, Container Ships**;
- **Heavy Lift/Load Cargo Ships** are designed to carry extremely large and/or heavy items:



- Another type of a Heavy Lift Carrier is **Float-On / Float-Off (FLO-FLO) Ship** in which the floating cargo is floated into the ship's cargo space.



Individual work/Presentation: be ready to comment upon the presented illustrations format.

Pair Work. Ask and answer the following questions:

1. What are the types of cargo ships' classifications?

2. What is the difference between universal and specialized ships?

3. What does CONBULKER mean?

4. What is the function of reefer ships?

5. What is the function of OBO ships?

6. What is the function of PROBO ships?

7. What is the function of O/O ships?

8. What is the function of BIBO bulk carriers?

9. What is the function of timber carriers?

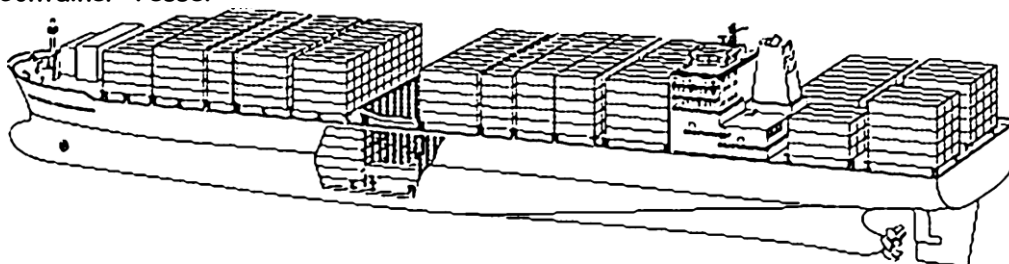
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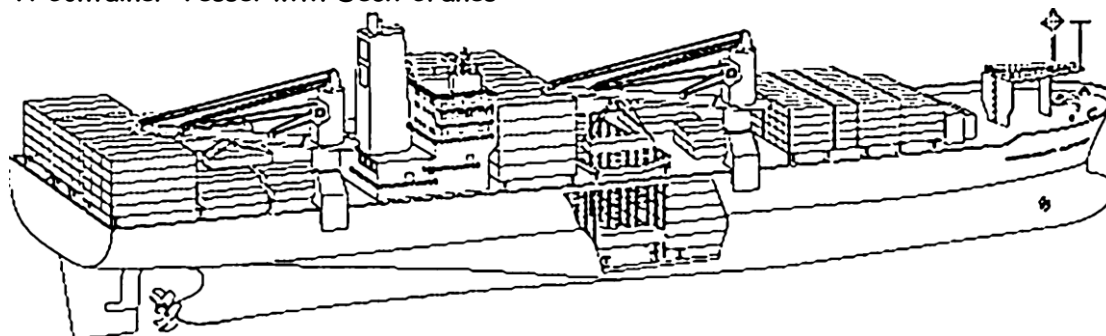
Types of Merchant and Special-purpose Ships: Two General Classes of Modern Ocean Shipping Business, Part I

Liner business is typically characterized by carriage of general cargo by container ships which operate as "common carriers" and call at ports by regularly published schedule. The capacity of a container ship is measured in TEU. A Container Vessel carries containers of 20ft (6m) or 40ft (12m) length, 8ft width and 8.5ft to 9.5ft height.

- **Distinguishing Features:** containers below and above the deck; possible deck-mounted cranes.
- **Types of Cargo:** any containerized cargo.
- **A Container Vessel**



- **A Container Vessel with Deck Cranes**



Individual work/Presentation: be ready to comment upon the presented illustrations.

Pair Work. Ask and answer the following questions:

1. Characterize Liner business.

.....

2. How is the capacity of a container ship measured?

.....

3. What are the typical containers' dimensions?








.....

4. What are container ships' typical distinguishing features?

.....

5. What are the types and sizes of container ships?

.....

First Generation (1956-1970)		Length	Draft	TEU
	Converted Cargo Vessel	135 m	< 9 m	500
	Converted Tanker	200 m		800
Second Generation (1970-1980)				
	Cellular Containership	215 m	10 m	1,000 – 2,500
Third Generation (1980-1988)				
	Panamax Class	250 m	11-12 m	3,000
		290 m		4,000
Fourth Generation (1988-2000)				
	Post Panamax	275 – 305 m	11-13 m	4,000 – 5,000
Fifth Generation (2000-?)				
	Post Panamax Plus	335 m	13-14 m	5,000 – 8,000

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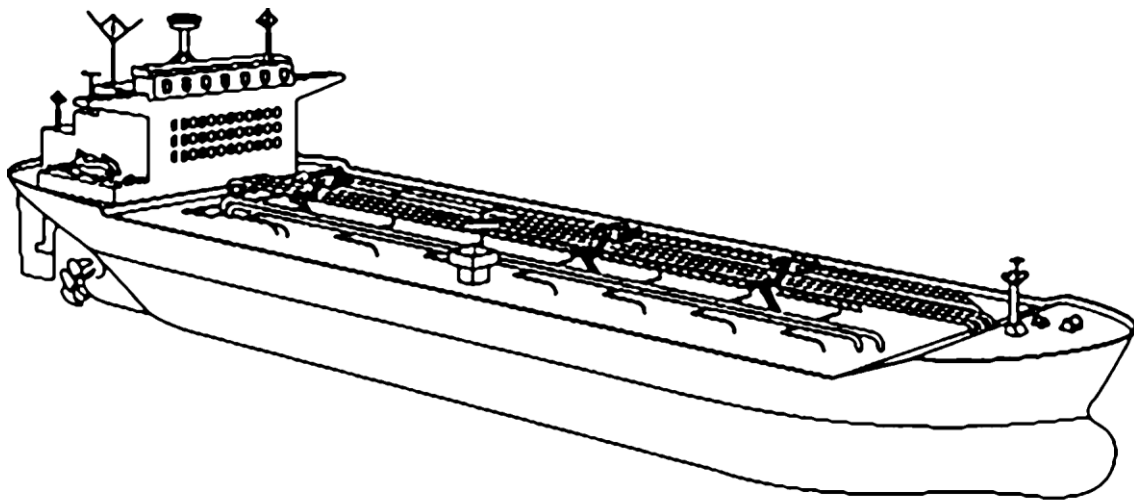
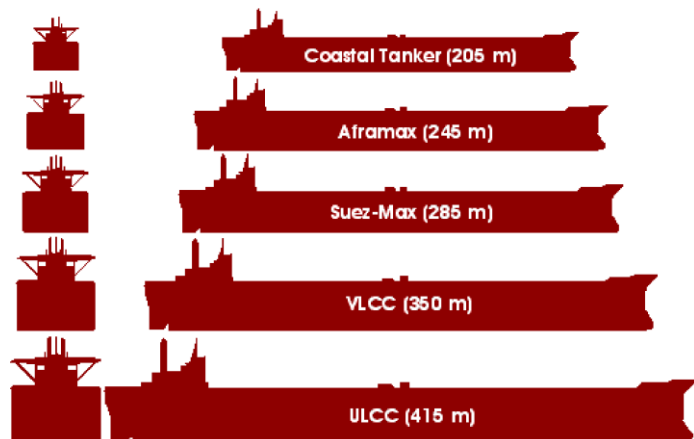
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Types of Merchant and Special-purpose Ships: Two General Classes of Modern Ocean Shipping Business, Part II

Tramp-tanker business is generally a private business between the shipper and the receiver according to the special contract, called a "charter party".

Different types of tankers transport a variety of liquids: crude oil, refined oil products and chemicals. When loading and discharging, the product is pumped on and off the vessel through pipes. Tankers are either single-hulled or double-hulled. Double-hulled tankers decrease the chances of the oil spill in an accident or a collision.

- **Crude Oil Tanker**

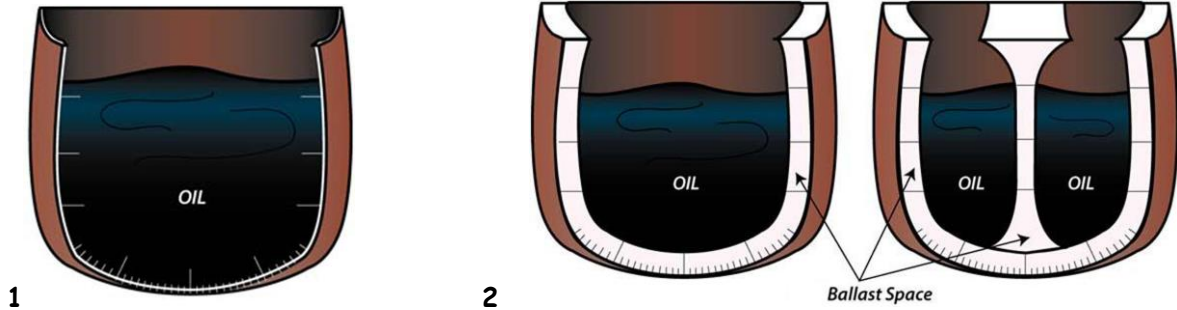


Distinguishing Features: The deck of a tanker is covered with pipes and pumps.

- **Catenary Anchor Leg Mooring (CALM) buoys** are used as offshore loading facilities for transferring oil from an onshore or offshore location to an oil tanker and vice-versa:



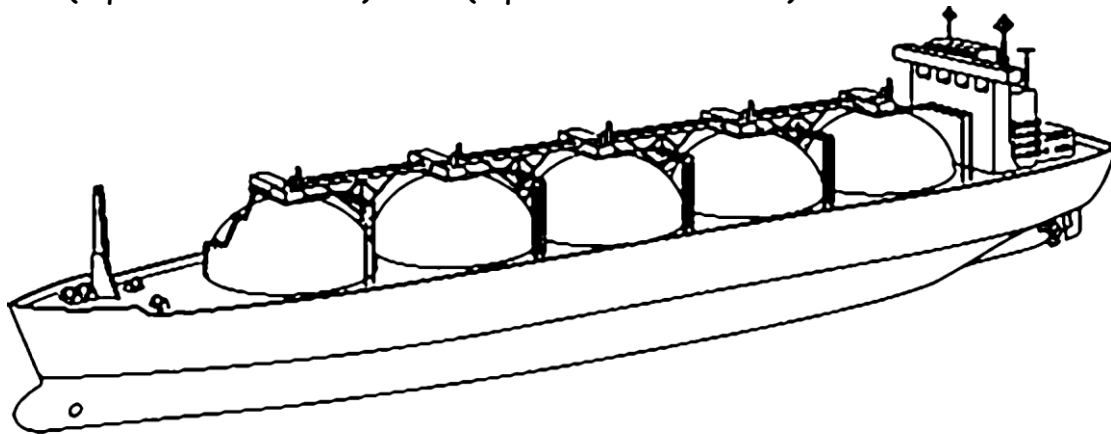
A single-hulled tanker carries oil directly within the hull structure (1), while a double-hulled tanker has separate tanks within the hull structure (2). If the vessel runs aground or collides with another, the inner wall protects the cargo. All modern oil tankers are double-hulled to avoid oil spills in case of a collision.



Oil tanker size categories

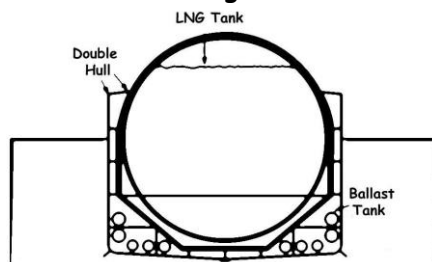
AFRA Scale		Flexible market scale	
Class	DWT	Class	DWT
General Purpose tanker	10,000–24,999	Product tanker	10,000–60,000
Medium Range tanker	25,000–44,999	Panamax	60,000–80,000
LR1 (Large Range 1)	45,000–79,999	Aframax	80,000–120,000
LR2 (Large Range 2)	80,000–159,999	Suezmax	120,000–200,000
VLCC (Very Large Crude Carrier)	160,000–319,999	VLCC	200,000–320,000
ULCC (Ultra Large Crude Carrier)	320,000–549,999	Ultra Large Crude Carrier	320,000–550,000

- LNG (Liquefied Natural Gas) / LPG (Liquefied Petroleum Gas) Carrier

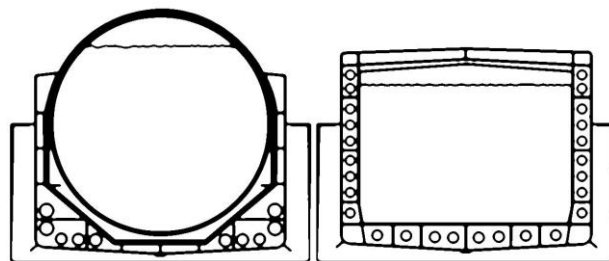


Distinguishing Features: spherical tanks half below and half above the deck.

- LNG Tank Arrangement:



Two Types of LNG Tanks:



At the same time, the new **Compressed Natural Gas (CNG)** technology offers effective transport of natural gas as an alternative to the transportation methods of LNG and pipeline.

Individual work/Presentation: be ready to comment upon all presented illustrations in their blind format.

Pair Work. Ask and answer the following questions:

1. Describe a tramp-tanker business.

.....

2. What types of tankers transport a variety of liquids?

.....

3. What is the difference between single-hulled and double-hulled tankers?

.....

4. What is a tanker's distinguishing feature?

.....

5. What does LNG tanker mean?

6. What does LPG tanker mean?

7. What does CNG tanker mean?

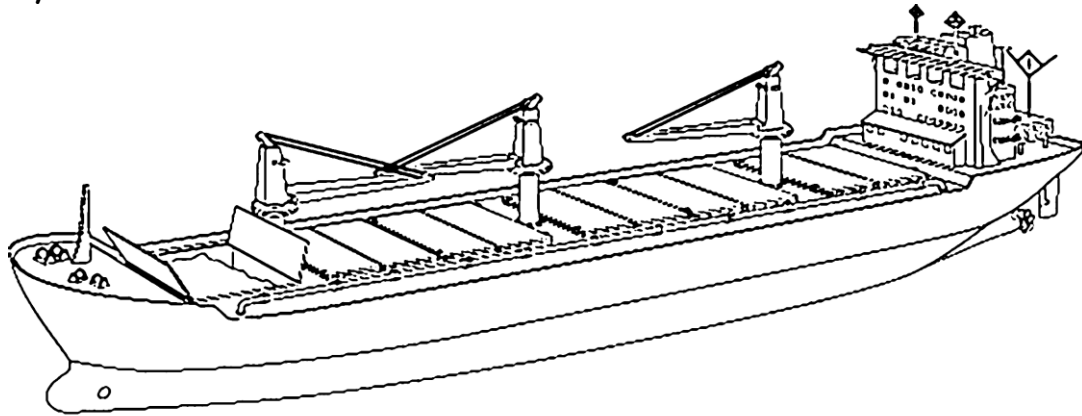
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Types of Merchant and Special-purpose Ships: Dry Cargo Ships

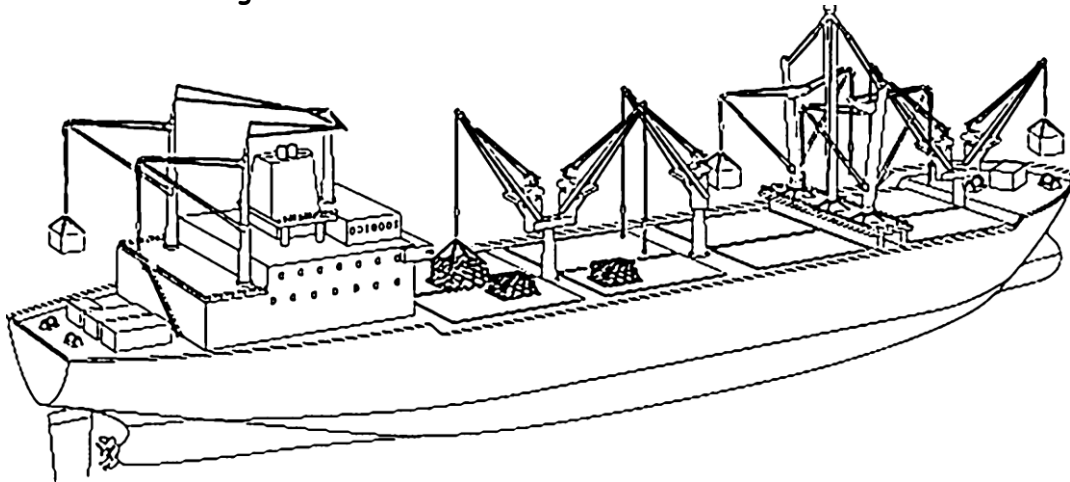
Dry cargo ships are mainly bulk carriers (bulk freighter, or bulker) and container ships. Gearless carriers are bulkers without cranes or conveyors. Bulk carriers, as a rule, contain a number of separated holds to carry more than one type of cargo at a time:

- Dry Bulk Carrier



Distinguishing Features: Geared bulk carriers have cranes or derricks which allow them to discharge cargo in ports without shore-based equipment.

- A Traditional Freighter



A traditional freighter carries break bulk cargo.

Distinguishing Features: several deck-mounted cranes (LO/LO lift-on/Lift-off)

Types of Cargo: All types of break bulk cargo.

- Bulk Carriers Sizes:

Type	Sub-type	At least	But no more than
Bulk carrier	ULBC	300,000 DWT	
	VLBC	200,000 DWT	300,000 DWT
	Capesize	100,000	200,000

		DWT	DWT
	Panamax	60,000 DWT	100,000 DWT
	Handymax	40,000 DWT	60,000 DWT
	Handysize		40,000 DWT
	Small		Up to 10,000 DWT

Individual work/Presentation: be ready to comment upon the presented illustrations.

Pair Work. Ask and answer the following questions:

1. Describe dry cargo ships.

.....

2. What is the typical cargo, carried by the bulk carriers?

.....

3. What are distinguishing features of the dry bulk carrier?

.....

4. What are distinguishing features of a traditional freighter?

.....

5. Characterize bulk cargo.

.....

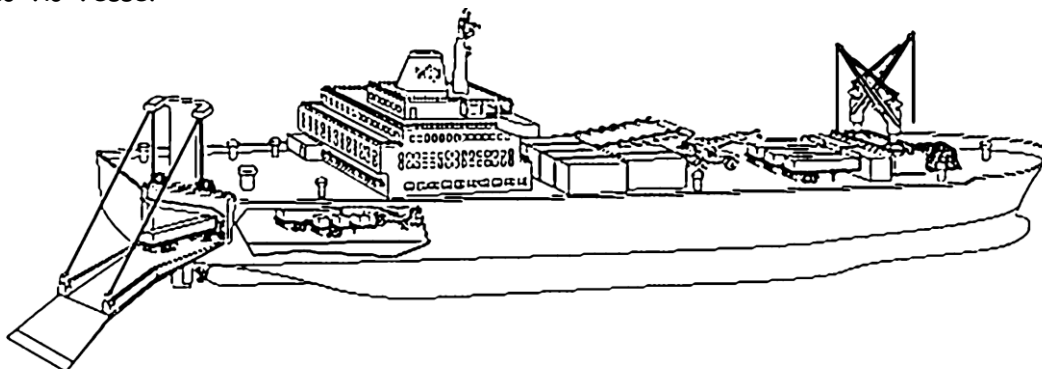
6. What are bulk carriers' types and sizes?

.....

Types of Merchant and Special-purpose Ships: Ferry Boats

Roll-on/roll-off (RoRo) ships are cargo ships to carry wheeled cargo, such as automobiles, trailers or railway carriages. These ships have bow and stern doors and steel ramps, which permit vehicles to drive on board and drive off again. Double-ended ferries have interchangeable bows and sterns, to shuttle back and forth between two terminals without having to turn around. Fast RoPax ferries have a large garage and a large passenger capacity and sail over 25 knots (46 km/h). Most ferries operate on regular, frequent routes.

- **Distinguishing Feature:** a ramp which allows motor vehicles (automobiles, trucks, trailers, farm tractors, etc.) to drive on and off the vessel.
- **Ro-Ro Vessel**



Individual work/Presentation: be ready to comment upon the presented illustrations.

Pair Work. Ask and answer the following questions:

1. Describe the ferry transport.

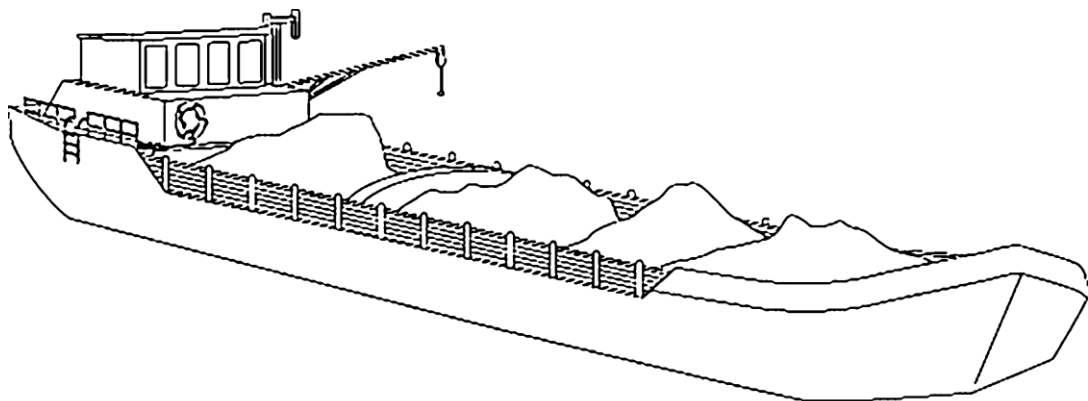
2. What are the typical ferry routes?
3. What does a wheeled cargo mean?
4. What are characteristic features of a double-ended ferry?
5. What is a distinguishing feature of Ro-RO's?

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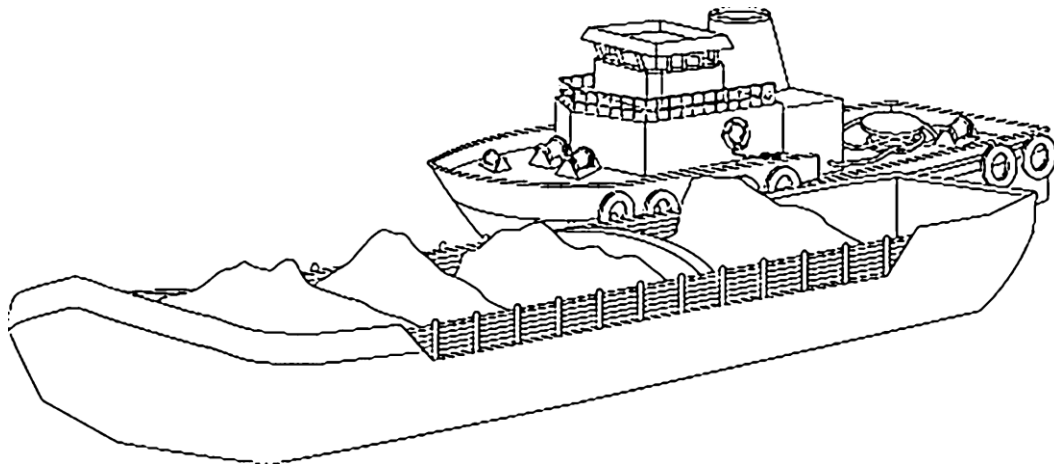
A Guide to Maritime Infrastructure: Governing Bodies, Facilities, Personnel and Ships Types of Merchant and Special-purpose Ships: Special-purpose Ships

Special-purpose ships include research/survey vessels and the like, which perform the following specific auxiliary service tasks:

- **SAR** - **Search and Rescue** (salvage) vessels, used in search and rescue operations;
- **Drill ships** for drilling for oil in deep waters;
- **Tug/Tugboats** and **pushboats** which assist to enter and leave port water area;
- **Dredgers** which excavate bottom sediments;
- **Cable layer ships** which lay underwater cables for telecommunications, electricity, etc;
- **Pilot vessels (launch/boat)**: transport pilots between the pilot stations and the ships that they are piloting;
- **Trawlers** (fishing vessels), equipped with the nets and cranes;
- Different types of **Lash-ships** (Lighter aboard ship/ Barge-carrying ships) which carry lighters or floating containers: "Sea bee", "Danube Sea", BACAT I/II, BACO, "Capri" and "Trimariner";
- **Barges** (flat-bottomed vessels), which transport heavy goods; most barges are not self-propelled and need tugboats towing or pushing them:
- **A Canal Barge with Propulsion**



- A Barge without Propulsion



Individual work/Presentation: be ready to comment upon the presented illustrations.

Pair Work. Ask and answer the following questions:

1. What special-purpose vessels do you know?

.....

2. What is the function of a cable layer ship?

.....

3. What are distinguishing features of trawler?

.....

4. What is the function of SAR vessel?

.....

5. What is the difference between a tugboat and a pushboat?

.....

6. What is the function of a drill ship?

.....

7. What is the function of a pilot boat?

.....

8. What types of lash-ships do you know?

.....

9. Describe the types of barges.

.....

10. What is the function of a dredger?

.....

Individual work: read the presented text and conclude why it is important for a seafarer (See Appendix VI). Motivate your answer in the form of a short summary. Use your own sentence structures; do not simply copy the text.

Write a paraphrase (the same ideas in different words) for the given passages:

Cargo ships are categorized partly by their capacity, partly by their weight and partly by their dimensions according to the various canals and canal locks through which they can pass. At the same time other classification systems include: the number of hulls; the shape and size; the building materials used; the type of propulsion system used; the geographic origin of the vessel; the manufacturer, series, or class.

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The specialized ships carry one type of cargo and include timber carriers; bulkers (bulk-carriers), reefer ships, which transport cargo requiring temperature-controlled transportation, tankers, container ship, etc.

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Applied Glossary:

- above - ზემოთ
- bag - (აქ) ტომარა
- below - ქვემოთ, ქვეშ
- besides - გარდა
- bottom - ფსკერი
- box - ყუთი
- box-like - ყუთის მსგავსი
- cable layer - გემი, რომელიც ალაგებს წყალქვეშა კაბელს
- capacity - მოცულობა

- **case** - შემთხვევა
- **conveyor** - კონვეიერი
- **deadweight (DWT)** - სრული ტვირთამწეობა
- **deck** - გემბანი
- **deck-mounted** - გემბანზე დამონტაჟებული
- **deep-sea vessel** - შორეული ნაოსნობის გემი
- **dense** - მჭიდრო
- **derrick** - გემის სატვირთო ისარი
- **dimension** - განზომილება
- **displacement** - წყალწყვა
- **distinguishing** - განმასხვავებელი
- **double-ended ferry** - „ორმხრივი“ ბორანი
- **double-hulled** - ორმაგი კორპუსის მქონე
- **dredger** - ფსკერსაღრმავებელი გემი
- **feature** - თვისება
- **flat-bottomed** - ბრტყელფსკერიანი
- **foot** - ფუტი (საზომი ერთეული)
- **freight** - გემის დაქირავება
- **freighter** - გემის დამქირავებელი
- **frequent** - ხშირი
- **garage** - გარაჟი
- **geared bulk carriers** - ამწით აღჭურვილი გემი
- **gearless carrier** - გემი, რომელიც არ არის აღჭურვილი ამწით
- **homogeneous** - ჰომოგენური, მსგავსი
- **interchangeable** - ურთიერთშენაცვლებადი
- **knot** - კვანძი; გემის სიჩქარის საზომი ერთეული = 1,853 კილომეტრი საათში
- **lighter** - ლიხტერი - სატვირთო გემი კარჭაპის ტიპისა, ჩვეულებრივ არათვითმავალი
- **lorry** - სატვირთო მანქანა
- **manufacturer** - მწარმოებელი
- **origin** - წარმოშობა
- **outboard** - გარე
- **partly** - ნაწილობრივ
- **pilot boat** - ლოცმანის კატარღა
- **pipe/tube** - მილი
- **private** - კერძო
- **propeller** - ხრახნი
- **pump** - ტუმბო
- **receiver** - მიმღები
- **reefer ship** - გემი, რომელიც აღჭურვილია სპეციალური სამაცივრო დანადგარებით სწრაფად ფუჭებადი ტვირთის გადაზიდვისათვის
- **rescue boat** - სამაშველო ნავი
- **research vessel** - კვლევითი გემი
- **sack** - ტომარა
- **salvage vessel** - სამაშველო გემი
- **schedule** - განრიგი, სქემა
- **sediment** - ნალექი
- **self-propelled** - თვითმძრავი
- **shape** - ფორმა/კონტური
- **shore-based equipment** - ნაპირზე განთავსებული აღჭურვილობა
- **similar** - მსგავსი
- **special-purpose vessel** - სპეცდანიშნულების გემი
- **spill** - დაღვრა
- **survey vessel** - კვლევითი გემი
- **to call at a port** - პორტში შესვლა
- **to discharge** - (აქ) გადმოტვირთვა
- **to drill** - ბურღვა
- **to drive off** - (აქ) გაყვანა
- **to equip** - აღჭურვა
- **to excavate** - გათხრა
- **to exist** - არსებობა
- **to hoist** - აწევა
- **to lay** - გაყვანა
- **to pack** - შეფუთვა
- **to permit** - ნების მიცემა
- **to present** - წარდგენა
- **to publish** - გამოქვეყნება
- **to push** - მიწოლა
- **to sail** - გემით ცურვა
- **to shuttle back and forth** - მოძრაობა უკან და წინ
- **to slide** - სრიალი
- **to tow** - გაქაჩვა
- **to traverse** - გავლა
- **to turn around** - მოხვევა
- **unpackaged/unpacked** - შეუფუთავი
- **water area** - აკვატორია
- **wheeled cargo** - თვითმძრავი ტვირთი
- **width** - სიფართო

