6.14 KEY WORDS

Air Cargo Complex: Air cargo terminal providing requisite infrastructural facilities for air cargo booking, preshipment inspection and certification, custom clearance, storage, etc., under one roof.

Air Cargo Tariff : Air freight rates and the rules and procedures for determination of these rates.

Gateway Airports : International airports like Delhi, Calcutta, Mumbai, Chennai and Thiruvananthapuram.

Hinterland Airports: Inland airports like Jaipur, Varanasi, Amritsar, Ahmedabad, Bangalore, Madurai, Hyderabad and Cochin.

Investment Turnover: Ratio of Sales to Capital employed.

Open Sky Policy : Policy allowing provision of air services by private operators.

Statutory Corporaton : A corporation established by special Act of Parliament.

6.15 ANSWERS TO CHECK YOUR PROGRESS

A 3	(i) 25	(ii) 31.88	(iii)	three	(iv)	support, connect	(v)	AAI	
B 3	(i) True	(ii) False	(iii)	True	(iv)	False	(v) True	(vi)	True

6.16 TERMINAL QUESTIONS

1 Describe the role of air transport in movement of cargo in overseas trade of India.

2 Outline the structure of civil aviation in India and discuss the role of AAI and DGCA in the functioning of air services in India.

3 Describe the working of Air India and Indian Airlines and state the impact of allowing private operators on their functioning.

4 What are the problems faced by air transport in India and how far the policy framework and programmes envisaged for the Ninth Plan could help in improving the air services.

5 Analyse the role of major airports in India in handling overseas cargo, and state the constraints faced by them.

6 Write explanatory notes on any three of the following:

a) Significance of air transport

b) Pawan Hans Helicopters Limited

c) Air cargo tariff

d) IGRUA

e) BCAS

UNIT 7 OCEAN TRANSPORT

Structure

7.0 Objectives

7.1 Introduction

7.2 Significance of Ocean Transport

7.3 Salient Features of Commercial Shipping

7.4 Development of Commercial Shipping

7.5 Operations and Constraints of a Ship

7.5.1 Shear Forces and Bending Movement

7.5.2 Centre of Gravity

7.6 Types of Ships

7.7 Registration of Ships

7.7.1 The Mechanics of Registration

7.7.2 Alteration and Termination of Registration

7.8 Classification of Ships

7.9 Structure of Shipping Services

7.9.1 Liner Shipping

7.9.2 Tramp Shipping

7.10 Glossary of Shipping Terms

7.11 Let Us Sum Up

7.12 Key Words

7.13 Answers to Check Your Progress

7.14 Terminal Questions

7.0 OBJECTIVES

After studying this unit, you should be able to:

- explain the significance of shipping
- outline salient features of commercial shipping
- describe the operations and constraints of ship
- explain the nature and uses of various types of ships
- describe the importance and procedure of registration of a ship
- explain the need and process of classification of a ship with classification societies
- distinguish between liner and tramp shipping
- explain the various terms used in shipping.

7.1 INTRODUCTION

Among different modes of transport, namely, road, rail, air, and water used for physical movement of goods traffic in international trade, ocean or sea transport plays a proverbially most important role. You know that road and rail transport, though very important as a link transport, are more suited for short distances and used in cases where either the exporting and importing countries are having geographical proximities or where use of sea transport is not possible. Similarly, use of air transport, though it has made rapid strides in recent years, suffers space limitations and higher freight costs in case of most commodities. As against these, the ocean transport has the capability of carrying a large array of items in the same ship at comparatively cheaper freight rates, particularly over longer distances. You have leant about the nature and significance of air transport in international movement of goods. In this unit you will learn about the importance of ocean transport, the features of commercial shipping, the structure of shipping services and the glossary of shipping terms.

7.2 SIGNIFICANCE OF OCEAN TRANSPORT

The basic function of transport, involving economic or social need, is the creation of utility of space that is the carriage of goods from places where the utility is low to places where it is higher. The value of little more tea or jute is relatively low in India while their value in Europe/USA is higher. The adoption of modern technology by shipping has set up a world wide trading network which has made it possible for the different regions of the world to specialise in exports. For example, production of coffee in Brazil or oil in Saudi Arabia is dependent on cheap and efficient system of sea transportation. Additional examples may be sited of giant car manufacturers of Japan who have set up their production units in Sourth East Asian countries due to cheap labour cost. It is found more economical to export for the manufacturers of Japan who have set up their production units in South East Asian countries due to cheap labour cost. It is found more economical to export the manufactured cars to the various destinations from these countries as compared to exports through their parent unit in Japan.

Similarly, in the case of USA, the cost of drilling oil in Arabian Gulf and then transporting throught sea to USA for domestic consumption is found to be cheaper than drilling oil in the Gulf of Mexico or around the coast of USA. The most significant factor in the development of international trade has been the cheapening of ocean transport largely due to economy in propulsion. Technical improvement in producing machinery and fuel efficiency are continuously helping in increasing the speed and lowering of cost coupled with increased cargo carrying capacity. This has facilitated the trading of raw material and food grains which has relatively low value to the entire world market.

Somehow, the international trade and transport were not integrated as a single system earlier when production and trade were treated as two separate elements. However, with an ongoing adoption of modern technology by shipping, trans-oceanic commuication system and computerisation of all the above have now been intergrated as a single system which resultantly has propelled the trade between contracting countries. The advancement in shipping technology has brought about a revolution in the methodology of transportation.

Due to the globalisation of trade and, as a result of the various trade conventions, countries are seeking new markets for their products. Delivery schedules and the applicable landed cost of the export commodity assumes significance due to intense competition in the international market. Sea transport is popular because huge amounts of cargo can be sent from one point to another at low cost. Shipping technology of today is such that it provides us with large sea carrier with sophisticated means of propulsion and handling. Voyages have thus become safer and quicker and this makes role of shipping very crucial in promotion of exports and imports. It is now an established fact that 75% of the global trade moves through sea route.

Ships are not merely physical carriers of trade but also constitute a substantial source of foreign exchange. It is obvious that national shipping utilised in carriage of country's exports constitute a source of foreign exchange through freight revenue. However, as a service industry, commercial shipping has its own characteristics and is absolutely different from industrial and commercial units. This is mainly due to the fact that commercial shipping is exposed to intense overseas competition. International mobility of ships further enhances the degree and extent of competition from time to time.

The demand of commercial shipping is derived from the requirement of trade which is affected by numerous exports. The international economic phases of peaks and booms upset the situation of demand and supply of shipping space. The restoration of balance between the two is not easy. Shipping being a highly capital intensive industry, cannot be liquidated easily. Similarly, adding shipping space would also be difficult due to its highly capital intensive nature compounded by the time in construction of a ships which would normally take two to three years. laying up tonnage can marginally mitigate the surplus situation. Like wise, increased demand cannot be easily met. At best, only a marginal improvement can be achieved in the supply by performance of more voyages through efficient ship management.

7.3 SALIENT FEATURES OF COMMERCIAL SHIPPING

The salient features of commercial shipping can be summarised as under :

1 Shipping is an international activity perpetually exposed to change in the international environment.

2 It is subjected to periodic cycles of depression and buoyancy in business.

3 The highly capital intensive nature of the industry necessitates (i) large financial resources, and (ii) adequate utilisation of capacity.

4 International mobility of ships generates competition on global scale and renders its business most hazardous.

5 The commitments of liner shipping service require an adequate and captive cargo base for ensuring its continuation on a stable and viable basis for effective support to the trade.

6 Traditionally, trade follows the established flags. But diversification of trade necessitates promotional shipping services under the protective umbrella of the State.

7 The establishment and expansion of national shipping in the third world countries would positively require financial and cargo support in the face of preponderance and intrusion o well established shipping interests from developed countries with superior technology.

8 The efficiency of shipping services and their cost depend mainly on the available port facilities.

7.4 DEVELOPMENT OF COMMERCIAL SHIPPING

In the Indian context with coast line of approximately 5,700 kms., almost 77% by value and 90% by volume of Indian trade moves through sea routes.

With the appearance of stem ships, the method of shipping goods underwent a complete change. The old time sailing vessels chartered to carry bulk cargo or general merchandise were virtually receiving full shipments from one port and did not sail till they were loaded to capacity. The sailing dates of these vessels, therefore, became erratic which resulted in an uncertainty about the arrival of merchandise at destination. Very often, such sailing vessels were owned and controlled through charter by important merchants or their firms. Hence, space available to small shippers became highly restricted.

With the substitution of stem for sail and steel for wood, the ship owners were able to maintain a definite schedule. The volume of the world trade naturally respond very favourably. On account of these facilities of the speculation in the trading operation was reduced. Dependable schedule of sailing, improvement in coastal facilities and the trans-oceanic communication made it possible for the shipper to send goods to distant market more accurately.

The introduction of marine diesel ships made possible the expansion in size of goods and which resulted in the increased cargo carrying capacity. This definitely brought about vigorous competition. But, at the same time, this element of growth in the capacity made it difficult for any individual merchant to fill the entire ship. Hence the vessels were no more dependent on the load of one single trader but required the patronage of even small exporters who were unable to export during the sailing vessel date. The introduction of diesel ships having substantial capacity eliminated the unpredictable schedule which brought down cost of insurance.

The application of modern technology is a continuing process and is presently working towards the era of specialised ships and operations. There has been a dramatic increase in size of both liner and tramp vessels. As a result of demand, both liner and tramp vessels have high capacity with modern handling equipment. This has contributed to the reduction in lowering the cost of transportation.

Since commercial shipping is highly capital intensive, use of loan finance is common feature for acquisition of ships. In recognition of this fact, the various countries have adopted various development funds for promotion of national shipping. This is being done in order to assist the development funds for promotion of national shipping. This is being done in order to assist the development of national fleet.

The most noticable aspect of global shipping is the growth of shipping tonnage. The share of developing countries in the world shipping fleet, however, is just about 25%, although this share in the world trade is substantial. The developed countries own approximately 70% of the global tonnage including the tonnage registered under the flag of convenience

countries. The remaining tonnage is owned by China. The heavy concentration of tonnage by developed countries is largely on account of historical and political aspect. However, efforts are being made through the forum of UNCTAD to correct the imbalance of facility. The endeavour is to formulate international legislation under which the third world countries would command ownership over the shipping tonnage commensurate with their share in the world trade.

7.5 OPERATIONS AND CONSTRAINTS OF A SHIP

We have been talking about the ships without actually knowing and understanding the operations and constraints of the ship. In fact, it is important to have an understanding of the limitations of the ship. In fact, it important to have an understanding of the limitations of the ship specially in context of liner and tramp ship.

A ship considered as structural unit is a girder, a box or a beam compiled of many small girders, braced, supported and fitted together so that the strength of the ship as a whole remains intact and strong. The science of ship building is directed to the designing several parts in a practical and economical manner so that ship may conform to the regulations laid down by the registration society and yet be as light as possible consistent with strength, rigidity and sea-worthiness.

There are varied forces to which the ship structure is subjected during its life time. These forces may be divided into two forces: (1) statical forces and (2) dynamical forces. The statically forces are (a) the weight of the structure which varies through the length of the ship, (b) buoyancy which varity with unit length of the ship, (c) direct hydrostatic pressure, and (d) concentrated low weight. The dynamic forces, on the other hand, are : (a) pitching, heaving and rolling, and (b) wind and waves. Then, there are two more concepts relating to the ship structure that have to be noted in the context of loading the ship. These are: (1) shear forces and bending movement, and (2) centre of gravity, and are explained below.

7.5.1 Shear Forces and Bending Movement

Consider a beam 'AE'. Divide this beam into equal segments B, C, & D. Hypothetically presume you have cargo weighing 100 kg. Ideally, in order to spread the load evenly so that the beam is subject t even stresses, it would be advisable to distribute this load equally all along A, B, D & E.

If the load is concentrated on segment 'C' then it is obvious that the stress is maximum on 'C and resultantly the beam would start sagging and if the load is in excess of tensile strength of beam then it will break conversely. Similarly, if the load is concentrated only on segment A & E then the beam would start hogging and once again if the load is in excess of beams tensile strength, it will break. The same holds good for loading a ship when all efforts are made to ensure that loading a ship when all efforts are made to ensure that loading bulk or general cargo in tramp or liner vessels respectively is evenly distributed. This would ensure that the stresses are kept of the permissible limit. These days you have sophisticated omputers on the ship which reveal the instantaneous stress at any point of the ship when load is applied or removed. It may be noted that the longer the beam the greater would be the vigil required over stress control.

7.5.2 Centre of Gravity

The best parallel may be found in case of a car. A car with passengers inside becomes safe since the centre of gravity of the car is contained within the periphery of the car even with passengers inside. Now load the carrier of the car with some suitcases. This load on the carrier has its centre of gravity and the car has its own centre of gravity. Since the car, passengers and luggage in the carrier would form a composite unit, the centre of gravity of all these combined would shift vertically upwards towards the centre of gravity of suitacses. However, if the luggage of the carrier is very high then, perhaps, the centre of gravity would move out from the periphey of the car and this may render the car unstable and give it a toppling movement.

Consider a box A, B, C, D of which 'E' is the centre of gravity of this box. Now place on top another box A, B, E and F. The centre of gravity of this box would be 'G' since A, B, C, D and A, B, E, F would now be composite units and the centre of gravity would move vertically

up, perhaps at 'E'. This holds good even for the ship. During loading, the centre of gravity of the ship keeps shifting vertically upwards in proportion to the weights added and moves vertically down when weights are removed.

This concept in totality is applied on a ship while loading and discharging the cargo. Due care is taken to load container/conventional ships for ensuring that the centre of gravity is kept within the permissible limit. Any disregard to this safety measure can give either a capsizing moment due to which the ship can sink or a moment which can damage the ship and cargo.

To summarise, the centre of gravity of a ship is the point at which the full weight of a ship may be considered to be concentrated in the point through which all the weights are vertically downwards. When a weights is added or removed, the certre of gravity of a ship moves directly towards the centre of gravity of the weight added and moves away from the centre of gravity when weight is removed. Similarily, when weights are shifted from one point to another, the centre of gravity of a ship moves parallel to the diretions of centre of gravity of the weight which is transferred.

The conventional vessels as well as the container vessels in which the cargo height at times may be very high, are specially designed to ensure that with the increase of height upto permissible limit the centre of gravity is restricted to the authorised limit. Similarly, tramp vessels which carry bulk cargo, with more weight but less volume and which is not loaded very high, are suitably designed to ensure that the load density is compatible with the stresses and, at the same time, the vertical height is not so high so as to give the vessel movements which would make it react violently.

Check Your Progress A

1 What do you understand by commercial shipping?

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2 Explain the concept of centre of gravity as applied to a ship.

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3 State whether the following statements are True or False.

i) The basic function of transport is the creation of utility of space.

ii) Ocean transport is popular because huge amounts of cargo can be transported from one place to another at relatively low cost.

iii) With the substitution of stem for sail and steel for wood, the shipowners felt handicapped to maintain a definite schedule.

iv) Conventional ships are designed primarily to carry dry bulk cargo.

v) In order to ensure that the stresses are kept within permissbile limits, the load in a ship should be evenly distributed.

vi) The restoration of balance between the demand and supply of shipping space is not a difficult exercise.

7.6 TYPES OF SHIPS

Having learnt about the operations and constraints of a ship, let us now briefly understand the nature and uses of various types of ships.

Conventional Cargo Ships

After the advent of unitisation, the conventional ships have become obsolete and virtually phased out. In any case, the conventional ships are those ships which are constructed and designed to transport finished/semi-finished products in break-bulk form. These ships have certain number of hatches (cargo storage compartments) and each hatch/hold is horizontally

divided with proper access into lower hold, upper hold, twin deck, upper twin deck similar to various stories is in a building. The purpose of these holds is to load shipment as per port rotation with due regard to the stability of the ship. These ships have own their cranes/ gantries and have moderate speed. These ships are generally used for liner trade.

Container Ships

These ships are designed and constructed for transportation of merchandise in containers. Since the containers when stowed, increase the cargo height the metacentric height is designed with certain counter measure to ensure that the centre of gravity is restricted to permissible limit even when the ship is loaded to its capacity.

Tankers

These ships are designed for transportation of liquid bulk cargo and vary in cargo carrying capacity from 15,000 dead weight to 3.5 lakh dead weight. These vessels are fitted with safety gadgets for prevention of not only the pollution but also for regulating petroleum vapours (hydrocarbons) to specified limit. Generally, these tankers do not have high speed but can carry heavy loads.

Dry Bulk Carriers

These ships are designed to transport bulk merchandise such as grains, iron ore, wheat etc. The flooring of these ships are adequately strengthened to withstand the load density of cargo loaded. These ships vary in the cargo carrying capacity from 10,000 m.t. to 1.75 lakh m.t. Once again, these ships operate on economically slow speed due to heavy loads.

Combination Carriers

These ships are designed to carry oil and dry bulk simultaneously, and can be of various types as explained below.

Oil, Bulk, Ore Carriers (OB): These ships are designed and equipped to either carry oil or bulk cargo or iron ore. Their cargo carrying capacity varies from 30,000 m.t. to 2,00,000 m.t. These ships are fitted with various safety devices and equipments to facilitate loading/ unloading of the above commodities. Such vessels also operates on economically slow speed.

Car Carriers : These ships are specially designed to transport motor vehicles from open place to another. Catalogue/media sale of the products is ongoing process and this is launched even before the product is manufactured. it, therefore, becomes essential that the products reach the consumer expeditiously. The cars are driven into ships in special bays which have automatic lashing arrangements for each car, and at the discharge port cars are driven out directly to the retail outlets. Car carriers have an average capacity of approx. 8,000 cars and operate at a very high speed.

RO/RO (Roll On-Roll Off) : This type of ship is specially designed to drive in or drive out cargo or containers loaded on chasis. Like car carriers, the chasis is driven by a prime mover and then lashed on to the bay. At the discharge port, the chasis is connected to the prime mover and drive out. This type of ships is ideally suited for cargo which is fragile in nature and for which the delivery requirement is fast.

Lash Ships : These are big ships which carry several small self propelled barges in which the cargo is loaded. In many countries which are land locked and navigable only through small rivers, it is practically impossible for big ships to enter the rivers due to restricted river depth. Hence, these lash ships arrive at the mouth of the river where the small barges are off loaded and, with the help of their propulsion, these move up or down the river to their respective discharge points.

Timber Carrier : These ships are specially designed for transportation of timber logs. Due to the water contents soaked in timber it would be very difficult to arrive at correct estimation of weight. Hence, these ships are not only suitably strengthened but have adequate stability factors.

Liquid petroleum Gas Carrier : These ships are designed to carry LPG and are fitted with all the safety gadgets which conform to the international standards of pollution and safety of life, etc.

7.7 REGISTRATION OF SHIPS

Compulsory registration of ships is almost 400 years old and dates back to the British

Navigation Act of 1660. The purpose of registration of a ship is to confine the privileges of certain branches of trade to ships owned by respective countries. As per the law, all ships operating within or outside territorial water have to be duly registered. In some countries, the ships are required to be registered compulsorily in the country to which its owner belongs or where it is built. But, in most other countries, it is the privilege of shipowner to register the ship in a country of his choice.

A ship built in country 'A' may be registered in country 'B' or 'C' provided the shipowner adheres and complies with the various rules and regulations of registering countries. As of today, the law still requires, with the exception of a few dispensations, that ships must be registered. There are, however, two important policy issues involved in registration: (i) who may be entitled to the privilege of plan of registry, and (ii) the evidence of title of ownership of the ship.

There are many other advantages associated with registration. For example, if a ship crosses the territorial water it is desired that the ship stores should be bounded and declared with the customs. This means that when the vessel reaches a port it has to be cleared by the customs which would not be possible without the production of certificate of registry. Bonded stores means that the items of provisions or spares used by the ship of any foreign make could be procured without levy of customs duty. Thus the stores become relatively very cheap on ocean going ships. In certain circumstances, the owner of an ocean going ships is permitted to limit his liability, when, without his personal fault of privity, loss of life or injury or loss or damages of goods occur for which his ship is normally responsible. In such a case, the maximum liability is related to the tonnage of the vessel which is evidenced correctly through a certificate of registry. Moreover, future transactions of the ship such as transfers, transmissions, mortgages etc., can be facilitated provided the ship is registered. In so far as the trade is concerned, underwriters would be very reluctant to insure an unregistered ship, and if they do so because of certain compelling reasons, the corresponding rate of premium becomes very high which may result in the countries export becoming non-competitive.

In the Indian context, sections 22 to 62 of the Merchant Shipping Act, 1958 stipulates the conditions under which a ship has to be registered. As per the provisions of this Act, every Indian ship over 15 tonnes net has to be registered. The Act further stipulates that a ship required to be registered may be detained until the master of the ship produces a certificate of registry. For the purpose of the Act, a ship shall not be deemed to be an Indian ship unless owned wholly by the persons who are (i) citizens of India, or (ii) a company or a body established under central or state act and which has its principal place of business in India, or (iii) a cooperative society registered under the Cooperative Societies Act, 1912.

The Act provides for certain officers/ organisations who are empowered to register the ship. In Inida, the ports of registration are Bombay, Kolkata and Madras and such other ports as may be announced by the central government in the official gazette. The official authourised to register the ship in these ports is the principal officer of the mercantile marine department. Similarly, the British Merchant Shipping Act authorises commissioner of customs or an officer authorised by the governor to act as registrars. For registering a vessel, the registrar has to keep a book known as 'Register Book' and the entries in this book are made subject to the following provisions.

1 As per the Indian Shipping Act, the ship is divided into ten shares. But, as per the British Act, the ship is divided into 64 shares.

2 As per the Indian Act, not more than ten owners can be registered for any one ship whereas, as per British Act, not more than 64 owners can be registered. This does not however, apply to, or affect, the beneficial interest of any number of persons represented by or through any registered owner or joint owner.

3 No person shall be registered as an owner of a fraction of a charater. But any number, not exceeding five, may be registered as joint owners of a ship or a share or a group of shares. This is applicable to both Indian as well as British Merchant Shipping act.

4 Joint oweners shall be considered as constituting one person, and they shall not be entitled to dispose off in severalty of any interest of ship or share in respect of which they are registered.

5 A company or a cooperative society may be registered as owner by its name.

6 On the first registry, book will show the name of the ship and the name of the port to which she belongs together with the following further information.

a) In case of an individual or a company, to be registered as owner or his agent.

b) In case of more than one individual, to be registered as one or more than one person or his agent.

c) Details of tonnage built and other particulars, description of the ships as shown in the survey certificate.

d) Particulars representing her origin as stated in the declaration of ownership.

7.7.1 The Mechanics of Registration

Registration is carried out by registers at the port of registry and each registrar is required to prepare a monthly return of the registars and other current action on their register. Such information is to be submitted by the registrars to the officer in charge of the Ministry of Shipping. Before a ship can be registered it must be surveyed. This is done by a surveyor of ships duly appointed by the registering authority. The preparation of pre-registration survey is to establish an accurate description of ship for the registrar. This include the vessels registered tonnage.

Application for registration is made by the shipowner. If a shopowner is a company, the application may be made by the duly authorised agent of the company. The application must make a declaration of ownership and must state when and where the ship was built. He must also declare the number of shares in which ownershp is divided. If there is more than one owner then the applicant must supply a list and must also declare that, to the best of his knowledge and belief, all others are qualified to be the owners of the registered ship.

Ships must have names. The proposed name of the ship to be registered must be approved by the competent authority. Name is part of ship's registration and any change in it would constitute an alternation of the registry. The name of the ship and her marking which includes the registry number and registry. The name of the ship and her marking which includes the registry number and registered tonnage must be cut into her main beam and a scale denoting the draught on both sides of a stem and on her stern post. Upon completion of this carving note formalities, the registrar will register the ship and issue a registry certificate.

7.7.2 Alteration and Termination of Registration

Any alteration to registry has to be through a proper application and to be effected only by the registrar at the original port of registry. The alterations may be due to physical changes in the ship such as its name or measurement or the alterations in its ownership due to mortgage/sale etc. While the physical alterations are known as external alterations, the changes of ownership, mortgage etc., are known as substantive alterations.

It may be noted that none of the transactions, external or substantive, will be legally complete and effective until the alteration in the registry book with due incorporation in the certificate of registry is effected. A ship may be totally lost due to fire or perils of the sea, or it may be constructively totally lost i.e., it is so damaged that the cost of its recovery and repairs exceeds its salvage value. In all these circumstances, the registered owner surrenders certificate of registry and applies for the cancellation of registration.

Where the ownership of a ship is changed, the owners may have the ship registered anew though it is not essential. However, renewal of registry would be necessary if a ship re appeared which had been presumed lost with the original registry clause. The same rule applies in the case of a ship which being sold and subsequently brought back.

Should an owner wish to transfer the registry from the port of registry to another, he may, through a proper application to the registrar, make such request.

7.8 CLASSIFICATION OF SHIPS

Apart from the official requirement of registration, almost all ocean going ships are classed and registered with one or other classification societies. Such registration is not compulsory but it is so advantageous that an un-classed ship is virtually non-existent now-a-days. In

the absence of classification, a lot of difficulty would be experienced by underwriters, chartering brokers, bankers, merchants and shippers and others who have ready access to the latest and most reliable information regarding the ship in which they are interested. Ship owners would also be at a disadvantage if there existed no reliable organisation to check and certify whether their ships were constructed, repaired and maintained in accordance with the highest prevailing standards and were in conformity with the international regulations.

Surveys undertaken by classification societies should not be confused with survey by the authorised representative of government for registration or with surveys by representative of under-writers. While classification surveys are undertaken to ensure that the ship adheres to the norms and maintains its gradation of class, the objective of survey for registration is just to check the measurement. Similarly, the objective of under-writer's survey is to verify the expressed warranty declared by the assured.

These days, when shipping industry is undergoing rapid progress with the adoption of latest technology, the under-writers would be very reluctant to issuer the ship if the same has not been assured a gradation class by the authorised classification societies. Not only that, the premium is dependent on the class a ship has. High class assigned by classification society implies that the ship adheres to the highest standards of construction and maintenance. Naturally the premium for such ship would be proportionally low as compared to a ship with an average class. Thus, classification of a ship by a classification society is of paramount importance As a matter of fact, in the absence of classification, it would be literally impossible for a shipowner to insure his ship. No merchant would be willing to transport his merchandise on a ship which is unclassed and resultantly uninsured because the cargo under-writers will not insure the merchandise if the same is transported on a ship which is uninsured and unclassed.

Some of the important checks that a classification society does on a ship are as follows:

1 Supervision of checking on the anchors of chain

2 Supervision of testing the steel used in the construction of a ship and its boilers, and in case of large ships their engine, forgings and castings

3 The supervision of laying of keel

4 Survey of registration machinery and appliances

5 Survey and measurement of a ship

6 Survey of ship full and machinery

7 Survey of safety appliances and emergency gates

Some of the well known classification societies are :

1 American Bureau of Shipping

2 Bureau Veritas

3 Indian Register of Shipping

4 Japanese marine Corporation

5 Norske Veritas

6 Registro Italiano

7 Llyods of London

7.9 STRUCTURE OF SHIPPING SERVICES

Shipping services are organised according to the nature and trading requirements of goods traffic in international trade. The goods traffic can be divided into two broad categories, namely, bulk cargo and break-bulk or general cargo. Bulk cargo, whether dry or liquid, belongs to the category of primary commodities such as ores, fertilizers, foodgrains, crude oils, petroleum, edible oils, etc., and move as ship loads. The break-bulk or general cargo on the other hand, refers to the manufactured or semi-manufactured, processed or semi-processed goods that move invariably in different types of packing, like cases, creates, bales, drums, rolls, bags etc. In shipping parlance, these items are generally referred to as

'general merchandise'. This classification of goods traffic in world trade between 'bulk cargo' and 'general merchandise' is extremely important because of the significant differences in the nature and marketing characteristics of these two categories of cargoes and, consequently, in their transportation requirements. The shipping services catering to the requirement of bulk cargo movement in world trade is known as 'tramp shipping' or 'chartering', while the shipping services required for the movement of break-bulk or general cargo is known as 'liner shipping'.

Let us now discuss briefly the peculiarities of these two shipping services.

7.9.1 Liner Shipping

A ship engaged in liner trade is a unit in a fleet of vessels regularly engaged in a particular trade. The owners are usually a limited company and, in many cases, are members of the liner conference or the other. The shipowner's remuneration mainly consists of the freight earnings which is dependent on the kind and quantity of cargo carried. All running expenses are paid by shipowner who appoints the master (captain of the ship) and supply the crew. Informations of the intended sailings is circulated among shippers by means of sailing schedules and by means of advertisement through news papers. Such information would generally include the following details:

1 Name of the ship
2 Port, Dock/Berth where the ship will load
3 The date when she will be ready to receive cargo
4 Last date of the receipt of cargo
5 Expected date of sailing
6 The port or series of ports to which the vessel will proceed

The owner of the ship is also the carrier but his functions will be restricted to those of the common carrier only. Ships which have fixed sailing schedules with fixed ports of call are known as liner ships. The segment of the trade which is generally moved through liner ships consists of semi-processed or finished items in small and measured quantity such as leather, tea, ready made garments, machinery, electronic goods, etc.

The fixed sailing schedule is the requirement of a regular liner shipping service with adequate frequency and port coverage. The fixed frequencies, announced by the shipowner will in advance, help the supplier/buyer to plain their trading. This particular phenomenon is in direct contrast with the movement of bulk commodities which is generally on tramp basis. Since the trade negotiations take place usually 2-3 months prior to the actual shipment dates, it is desirable that, during the interim perod, there is no variance in freight levels pressure otherwise it would result in serious financial losses to either the shipper or the consignee.

In view of the above, the freight rates in liner trade are laid down in the tariff or sometimes negotiated. This provides an opportunity for shippers and importers to plan their shipment programme in advance at pre-determined freight rates, results in the shipowner incurring heavy losses due to maintaining the liner service. In good old sailing days, the sailing ships were either owned or chartered by the big exporter/trading houses and would sail out only when they were full to their capacity. This often resulted in the departure and the arrival of such sailing vessels being very erratic. Moreover, since the sailing vessels were monopolised by big time exporters, these ships could not accommodate the cargo of small exporters who would thus be deprived of the right to trade with overseas buyers. With the substitution of iron for wood and steam for steel and further advancement from steam to marine diesel, the shipping capacity became enormous which made is possible for any exporter to fill the complete ship. This presented an opportunity to even the small exporters to participate in international trade. With the advancement of shipping technology and communications, a few low value commodities could also be offered as potential trading products.

Now-a-days, the liner ships sail out from ports irrespective of whether they are full or half full or empty, and arrive at the intermediate ports of call and final destinations on the dates pre-announced by the liner operators. If the liner ships wail out with a reasonable load then perhaps the liner operator is able to achieve a break-even situation. But, sometimes, in order to keep his commitment of maintaining fixed schedule, he is required to depart from the port of loading with a low load which may be less than the break even point. This is the sacrifice that a liner operator has to make, sometimes, for maintaining continuity in liner business. It would be pertinent to mention that committed trade of finished/semi finished products thrives on a committed liner service. Conversely, it would be impossible to maintain liner services if there is not rate of finished/semi-finished products. Thus, the two are highly interdependent and one cannot do without the other.

In order to remain in business it is imperative that the freight receipts of a shipowner do not fall below the costs incurred for providing the liner service. In fact, he should be able to generate some surplus. But, in a highly competitive situation as of today, the shipowner has little control over determination of freights which are governed by forces of demand and supply. However, in order to maintain control over freight rates, ensure stability of sailings and restrict or eliminate competition among themselves, liner operators become members of an association known as 'conference' which evolves common tariff rates and encourage pooling agreements between the members. You will learn about the liner freighting practices and the conference system in detail in Unit 11.

Selection of Liner Vessels : While selecting a liner vessel, the shipper should keep the following factors in mind:

1 Regularity of sailing
2 Carriage on liner terms
3 Liabilities of the carrier operating liner vessels under Hauge/Visby/Hamburg Rules
4 Conference membership for stability of freight rates
5 Classified vessels with appropriate classification society
6 Insurance approved vessels
7 Check L/C for age of vessels
8 Vessels do not call at any prohibited ports
9 Nationality of the vessels should not under any UN sanction
10 Sensitive/perishable cargo-desire facilities on vessel
11 Availability of reefer plugs at pre-stack and on vessel
12 Through bill of lading
13 Issuance of 'Sea Way Bill'
14 Special security provided by carrier during transit in case or very high value cargo
15 Availability of required containers
16 Containers provided ISO & sea-worthy

7.9.2 Tramp Shipping

Movements of bulk commodities such as iron-ore, fertilizers, food grains, coal, crude oil, petroleum, LPG, chemicals, etc., are usually offered by shippers in ship loads. Hence they would like to hire or charter a part of the vessel or the full vessel to meet their exclusive requirements. To suit the shipper's requirement, a shipowner usually offers specialised carriers for transportation of various commodities. These ships operate on the principle of tramping and move from one place to another as per requirements of the trade. Their freight rates are freely negotiated between the shipper/chaterer and the shipowner and are solely guided by forces of demand and supply for such ships. Historically, this has been found to be the best method of keeping down the transport cost of low value bulk commodity and this has served as an impetus to the boost of trade in bulk commodities.

Unlike a liner ship operating under a conference system, tramp ship takes maximum advantage of the freedom of high seas and flexibility in movement on various trade routes. Tramp vessels have no fixed routes or schedule of arrival or departure. The routes and the schedule of tramp ships is regulated through the requirement of the shipper/charaterer. Normally the cargo suited to tramp ships have following characteristics:

1 Sufficiently low value so that the cheapness of transport outways the value of speed and regularity of delivery;
2 Relatively great bulk of weight;

3 Reqires no exceptional facilities of the carriage for handling preserving; and

4 Availability for shipment in full cargo loads or capable of being handled in bulk combined with other shipments without marks and numbers.

Tramp ships loadability is often subjected to seasonal or periodic variations. The irreguar and erratic movement of tramp ships reduces its potential for securing return cargo. You wil learn about chartering practices in detail in Unit 12.

Check Your Progress B

1 What is the main purpose of registration?

.....

.....

.....

2 What does the information circulated among the shippers relating to the intended sailings of the liners usually include?

.....

.....

.....

3 Give two examples of liquid bulk cargo and two examples of dry bulk cargo.

.....

.....

.....

4 Fill in the blanks.

i) Any alteration to registry has to be effected only by the registrar at the ..... port of registry.

ii) The underwriters would be very reluctant to insure the ship if the same has not been assured a ..... class by the classification societies.

iii) The owner of a liner ship is also the .....

iv) Now-a-days the liner ships sail out from ports irrespective of whether they are full or ..... or empty.

v) Tramp ships have no fixed ..... or schedules of arrival and departure.

7.10 GLOSSARY OF SHIPPING TERMS

A-1	A first class vessel. The letter A specifies the class in which the hull is scheduled, and the numeral '1' refers to the stores and equipment.
A.A.A.	Against All Risk
ABS	American Bureau of Shipping
ACCEPT	Automated Cargo Clearance Enforcement Processing Technique
AEI	Automated Equipment Identification
Ad. VAL. or A.V.	Ad-volarem or According to Value
AGW	All Going Well
AI	All Inclusive
ANF	Arrival Notification From
ANERA	Rate of Conference
APS	Arrival Pilot Station
AQ or A.Q. or A/Q	Any Quantity
A/R	All risks; Accounts Receivable
ARB	An Arbitrary Charge
ATS	All Time Saved
A/W	Actual Weight; All-water
BAF or B.A.F.	Bunker Adjustment Factor
BE	Both Ends
BL or B/L	Bill of Lading
BM or B.M. or B/M	Board Measurement- the basis for assessing rates on lumber products
BSC or BSC	Bunker Surcharge
BT	Berth Terms
CAD or C.A.D.	Cash Against Document-Cleared (Customs) at Discharge Port
CAF or C.A.F.	Currency Adjustment Factor
CBR	Commodity Box Rate
C & F	Cost and Freight
CHRTS	Charterers
CIF or C.I.F.	Cost, Insurance and Freight
C.I.F.C. & I.	Cost, Insurance, Freight, Collection & Interest
C.I.F.C. & E.	Cost, Insurance, Freight, Collection & Exchange
CIP (ICCI)	Carriage and Insurance Paid to
CL	Container Load
COD or C.O.D.	Cash (or Collect) on Delivery
COFC or C.O.F.C.	Container on Flat Car
COGSA	Carriage of Goods by Sea Act or Promerene Act
COMBO	Combination
CPP	Clean Petroleum Product
DEM	Demurrage
DEQ (ICCI)	Delivered Ex-Quay (Duty Paid)
DES (ICCI)	Delivered Ex-Ship
DEL/RDEL	Delivery, Redelivery
DT	Displacement Tonnage-Quantity of water displaced by a ship and its contents
DIRTY	Crude/Black Oil
DR or D.R.	Dock Receipt; Differential Rate
DST	Double Stack Train
DWT	Dead Weight Tonnage-a measure of ship's total carrying capacity in tons or metric tons
EB or E.B. or E/B	Eastbound
ED	Export Declaration
EL	Export Licence
EP	Export Permit
ETA or E.T.A.	Estimated Time of Arrival
ETC	Estimated Time of Completion
ETD or E.T.D.	Estimated Time of Departure
ETF	Estimated Time of Finishing
ETR	Estimated Time of Readiness
ETS	Estimated Time of Sailing
FAK	Freight All Kind
FAL	Fuel Adjustment Factor
FCL	Full Container Load
FEU	Forty-Feet Equivalent Unit
FIO	Free In and Out
FOB	Free on Board
FOB Vessel	Free on Board Vessel
FOR or F.O.R.	Free on Rail
FOT or F.O.T.	Free on Truck
FPA or F.P.A.	Free on Particular Average
FRT	Freight
FTZ or F.T.Z.	Free Trade Zone; Foreign Trade Zone
GA or G.A.	General Average
GATT	General Agreement on Tariff and Trade
GBL or G.B.L.	Government Bill of Lading
GLFT	Gross Load/Free Discharge
GO or G.O.	General (Governmental) Order
GPT	General Preferential Tariff
GRI	General Rate Increase
GRT	Gross Registered Tonnage
HL	Heavy Load
IMO	International Maritime Organisation

ISO	International Standard Organisation
IT or I.T.	Intermediate Transportation, In Transit
JOT or J.O.T.	Just On Time
KD or K.D.	Knocked Down
KDF or K.D.F.	Knocked Down Flat
L & D	Loss and Damage
LO or L.O.	Lift On
LASH or L.A.S.H.	Lighter Abroad Ship
LC or L/C	Letter of Credit
LCL	Less then Container Load
LCV	Longer Combination Vehicles
LDDC	Least Developed/Developing Countries
L.O.A.	Length Over-all
MO or M.O.	Manifest Order
M.O.P.	Muriate of Potash
MOLOO	More or Less Owner's Option
MOLCHOPT	More or Less Charterer's Option
MV or M/V	Motor Vessel
MT	Empty Container
NAABSA	Not Always Afloat But Safely Aground
NOS or N.O.S.	Not Otherwise Specified
NRT	Net Registered Tonnage
NVO or N.V.O.	Non-Vessel Operator
NVOCC or N.V.O.C.C.	Non-Vessel Operating Common Carrier
OH	Over Height
OOG	Out of Gauge
OCP	Overland Common Point
OWS	Owners
PO or P.O.	Purchase Order
POA	Place of Acceptance
POD or P.O.D.	Port (or Point) of Discharge
POL or P.O.L.	Port of Loading
PPD or P.P.D.	Prepaid
P To P	Port to Port
P.U.& D.	Pick Up and Delivery
"Q"	Quality
ROB	Remaining on Board
RED	Rate Extra Demurrage
RO - RO	Roll On/Roll Off
SA/SHEX	Saturday Holidays Excepted Unless Used
SDD	Store Door Delivery
SHINC	Sunday Holidays Included
SHEXEIU	Sunday Holiday Excepted Even If Used
S/S	Sue 2 Laden/Suez Ballast
SUBOPEN/SUBSTEM	Subject Open/Subject Stem
SUB C/P DETAILS	Subject Charter Party Details
SUB DGS	Subject (Approval of) Director General of Shipping
SOB	Shipped on Board
S.L.& C or SLAC	Shippers Load and Count
SPA	Subject to Particular Average
STC	Said to Contain
STEVE	Stevedore
SWB	Sea Way Bill
T&E or T.&E.	Transit and Exportation
TBL	Through Bill of Lading
TERM	Terminal
TEU	Twenty Feet Equivalent Unit
TWRA	Transpacific Westbound Rate Agreement

THC	Terminal Handling Charge
TTO	Through Transport Operators
UNCON	Uncontainerable Goods
VA or V.A.	Value Added
WB or W.B.	Westbound, Way Bill
W/M	Weight or Measure
WPA or W.P.A.	With Particular Averagge
WT	Weight

7.11 LET US SUM UP

Reliability, safety, speed and modernisation of commercial shipping have become the key parameters in the present era of modernisation. While a reliable and fast shipping increases the turnover of trade between contracting countries, ships built to stringent safety regulation with latest equipment for safe handling of cargo reduces the anxiety of traders towards the safety of their cargo and also results in reduced insurance cost.

Commercial shipping is highly influenced by the international economic fluctuations. This results in commercial shipping undergoing phases of boom and depression which keeps on upsetting the balance between demand and supply of shipping capacity. This, in turn, influences the freight market in tramp operations as well as the liner freight costing.

A ship is a strong and light structural unit built in strict conformity with the standards laid down by the registration authorities. It is also subjected to various static and dynamic forces. There are various tyeps of ships like conventional cargo ships, container ships, tankers, dry bulk carriers, car carriers, etc. However, all ships are broadly classified into two categories : (1) liner shipping and (2) tramp shipping. Liner ships are suitable for transportation of finished/semi-finished products and have fixed port rotation with fixed dates of departure and arrival duly announced to the trade almost 3/4 months in advance. The purpose of maintaining liner service is not only to regulate the production/inventory of merchant exporter/importer but also to maintain stability in the freight rates. Tramp ships, on the other hand, are ships which are specially designed to either transport liquid bulk or dry bulk. The cargo is most suited to use of such ships is usually of low value and can withstand long transit requiring no special handling facility.

Whether it is a liner ship or a tramp ship, it is obligatory on the part of all shipowners to register their ships as per the prevailing law of the land. Unless a ship is registered it becomes impossible for insurance companies to underwrite the ships and, consequently, they will not be patronised for trade. In addition, it is also essential for a ship to be classified by one of the classification societies which, after a proper survey, awards a certain certification to the ships that is internationally accepted.

7.12 KEY WORDS

Bale Space : It is the total amount of underdeck capacity available for packed cargo.

Break Bulk Cargo : Cargo moving in small quantities and generally in different types of packings.

Cargo Capacity : It is measured in grain space and bale space depending upon the cargo.

Cellular Ships : Ships having holds designed to form a series of cells into which the containers are placed.

Chartering : Engaging the ship for bulk cargo on contract basis.

Combination Carriers : Ships designed to carry oil and dry bulk simultaneously.

Common Carriers : The carriers providing service to all without discrimination.

Container Vessels : Ships designed for transportation of merchandise in containers.

Conventional Vessels : Ships designed to transport finished/semi-finished products in break bulk form.

Deck : The deck or decks can divide the ship into several floors, and carry cargo and passengers.

Dead Weight Tonnage : It is the measure of the ship's total carrying capacity in tons (or metric tons) of cargo, fuel, stores, passengers and crew when fully loaded.

Dry Bulk Carriers : Ships designed to transport bulk merchandise such as food grains, iron ore, wheat etc.

Grain Capacity : It is the complete capacity of the ship's cargo space and includes the hatchway.

The Hatch : An opening in a ship's deck, used for lowering and taking out the large objects into/out of the cargo hold of a ship.

The Hold : Storage space situated under deck of merchant ships where cargo is stored.

Hull : The shell including the super-structure of a ship.

Keel : The backbone of the ship on which ribs are fixed in the form of floor plates and frames. It is an important part of the ship because it carries large part of the weight.

Lash Ship : Lighter Abroad Ship (a maritime ship) which carries several small self-propelled barges or lighters (boat like) in which the cargo is loaded.

Liner Shipping : Shipping services catering to movement of break-bulk or general cargo.

Load Lines : The load line convention regulates the safe depth to which vessels may be loaded.

Panamax : The bulk carriers with a breadth which can pass through the Panama Canal (106 ft. wide).

Roll on - Roll off Carriers : Ships designed to drive in or drive out cargo or containers loaded on chasis.

Sea Wagbill : Consignment note covering the carriage of goods by sea.

Tackle : Ship's own gear to load/unload cargo.

Tankers : Ships designed for transportation of liquid bulk cargo.

Tramp Shipping : Shipping services catering to bulk cargo.

VLCCs/ULCCs : VLCCs are very large crude carriers with a capacity 72,00,000 to 3,00,000 dwts. while the ULCCs are ultra large crude carriers over 3,00,000 dwts.

7.13 ANSWERS TO CHECK YOUR PROGRESS

A	3	(i)	True	(ii)	True	(iii)	False	(iv)	False	(v)	True	(vi)	False
B	4	(i)	original	(ii)	gradation	(iii)	carrier	(iv)	half-full	(v)	route		

7.14 TERMINAL QUESTIONS

1 Enumerate the salient features of commercial shipping and explain its importance for the development of international trade.

2 Describe the nature and uses of various types of ships. If you are required to transport 30,000 MT of crude oil from UK to USA and within the same month 80,000 MT of whea in bulk from New Orleans to Rotterdam, decide upon your selection of a ship and justif the same.

3 What are the advantages of registration of a ship. An Indian company has purchased a new ship. Briefly describe the procedure for its registration.

4 Distinguish between registration and classification, and describe the advantages of classification.

5 Indicate the difference between classification survey, registration survey and under-writers' survey; and enumerate the important checks the classification society does on a ship.

6 (a) What do you understand by liner shipping? How does it differ from tramp shipping.

(b) Outline the factors a shipper has to keep in view while selecting a liner vessel.

UNIT 8 MULTI-MODALISATION

Structure

8.0 Objectives

8.1 Introduction

8.2 Concept of Unitisation

8.3 Concept of Containerisation

- 8.3.1 Need for Containerisation
- 8.3.2 Dimensions of Containers
- 8.3.3 Advantages of Containerisation
- 8.3.4 Disadvantages of Containerisation
- 8.3.5 Types of Containers

8.4 Inter-modalism and Multi-modalism

8.5 Inland Container Depots and Container Freight Stations

8.6 Land Bridging

8.7 Let Us Sum Up

8.8 Key Words

8.9 Answers to Check Your Progress

8.10 Terminal Questions

8.0 OBJECTIVES

After studying this unit you should be able to:

- explain the concept of unitisation
- explain the concept of containersation and its need
- describe the standard dimensions of containers
- enumerate the advantages and disadvantages of containerisation
- identify the various types of containers used and describe their salient features
- explain the concepts of inter-modalism and multi-modalism
- state the advantages of multi-modal transportation
- explain the concept of land bridging and its use.

8.1 INTRODUCTION

Transportation of international merchandise has traditionally been carried by road/rail/ inland water ways/shipping and last, but not the least, air. In Units 6 and 7 you learnt about the air transport and ocean transport. It is felt that, in order to have consistent exports growth, a country has also to streamline its transport infrastructure. This would necessitate a complete restructuring of transport network and removing the impediments which come directly in way of smooth flow of imports/exports with particular emphasis on the adoption of unitization/containerisation and multi-modal transportation. This helps in integrating international transport logistics. The most significant examples in this context are of Singapore and Jabel Ali where the ports have contributed significantly to the national exchequer/economy and have come out as the leading container handling ports. In this unit, you will learn about the multi-modal transport system which is considered essential for efficient movement of containerised cargo.

8.2 CONCEPT OF UNITISATION

Transportation from shipper's premises to gateway port usually required transportation through road/rail/sea. This aspect of transportation from warehouse to gateway port resulted in multiple handling, damages, pilferages and delays due to switch over from one mode of transport to another. Keeping this factor in mind, the underwriters naturally insured the goods for transit at a higher rate of premium. To overcome the above obstacles and also