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 exohequer/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

for achieving speeder cargo flow, the concept of unitisation was introduced which resulted in an era of the finished/semi-finished products being carried through containers. This made transportation not only cheaper but also safer and faster. Unitisation is based on the principle of increasing the size of unit load to reduce the handling and transportation costs.

8.3 CONCEPT OF CONTAINERISATION

Containerisation is the most unique concept of unitisation and is based on the concept of door to door technology. The International Standard Organisation (ISO) defines a freight container as 'an article of transport equipment intended to facilitate the carriage of goods' by one or more modes of transport without intermediate destuffing/stuffing of container. A marine container is strong enough for repeated use as it is fitted with devices for instantaneous handling and designed to be easily filled in or emptied out. Containerisation enables through transportation of cargo from origin to destination. It has been estimated that the inventory, insurance and documentation costs amount to as much as 40% of the total delivery cost. With containerisation this cost could be reduced considerably.

8.3.1 Need for Containerisation

As is commonly understood, the theory of unitisation is based on the principle of increasing the size of unit load and reducing the handling and transportation cost. Containerisation is the most versatile of all unit load system. Till the Second World War, and as late as early 60's, the transportation of finished/semi-finished goods used to be through conventional ships in break bulk form. These ships which had several holds (storage spaces) and, upon arrival of the ships at the merchandise, were loaded in the various holds with due consideration to port rotation compatability between different merchandise, perishability due to ventilation, and stability of the ship. If a ship was to sail from Port A and was to reach Port F after calling intermediatory port of B,C,D & E, the loading at port A involved a great deal of planning since port B,C,D & E cargo had to be easily accessable covering the first port of call. Similarly, if the Port-C cargo happened to be of fragile nature, Port-B cargo could not be loaded above Port-C cargo. Other considerations towards compatibility such as onions could not be co-loaded with bag-flower or detonators could not be co-loaded with explosives also can not be overlooked. These considerations, coupled with adherence to the minimum stability criteria of the ship as prescribed by the regulating authorities, have to be kept in mind. In addition, such loading of break-bulk in conventional ships suffered from the following limitations:

1 The loading of break-bulk shipments on conventional ships resulted in prolonged port stay which consequently effected faster turnaround of trade between the countries.

2 The delayed despatch resulting in delayed added to higher amount of bank interest to the shipper.

3 Since the loading of break bulk merchandise on conventional ships required special attention, it became very difficult for the conventinal ships to maintain their schedule. The erratic schedule resulted in inventory imbalance and prevented the buyer from adhering to the commitment to his retailers. This often resulted in unnecessary bickerings among suppliers, buyers and retailers which effected the country's trade.

4 Loading on conventional ships involved multiple handling which resulted in frequent damages due to improper utilisation of equipments/neglect or ignorance. For example, hooks being used for bagged cargo resulted in puncturing of bags. Similarly hooks used on carpet rolls resulted in damages whereas fork lift used for cartoons resulted in puncturing of cartons.

5 Damages due to compatibility were also rampant and, despite best precaution and planning, there were instances when two commodities which were non-compatible were co-loaded. This resulted in not only damaging the commodity but, at times, in serious accidents.

6 Keeping in mind the constrains of loading on the conventional ships, the insurance premium became high as the underwriters thought it prudent to cover all contingencies. This resulted in an increased cost of merchandise making it non-competitive for export.

7 The break-bulk stowage often resulted in pilferage.

To overcome the above constraints and also to reduce the cost to the shipowner and improve the turnaround of ships, solution was found in the concept of containerisation which completely changed the conventional method of ocean transport in developed

countries and gained equal popularity in developing countries.

8.3.2 Dimensions of Containers

The basic concept of containerisation is to place as much cargo as can be pressed in a container within the prescribed limits of pay load. The dimensions of the container have been standardised by international standard organisation. The purpose behind standardising the dimensions of the container is to facilitate the multi-modal transportation and handling of containers in all countries. The intention behind standardised dimensions is to fructify the concept of door to door delivery upon which the containerisation is based.

The container is stuffed with cargo by mechanical means by using fork lift when cargo is palletised and manually at the shipper's warehouse when the cargo is not palletised. After stuffed to its capacity, it is put on the trailer chasis or rail car and taken to the loading berth where it is lifted by special container handling equipment or crane and ultimately stowed in the slot of the ship specially constructed for this purpose. At the discharging port, the same process is followed and the container is taken to the importer's warehouse for de-stuffing. The only time the container may be opened during the transit is for customs examination.

A container is usually referred in terms of 20 feet equivalent unit (TEU). Therefore, a container with length as 20 ft. would be referred as 1 TEU and a container having length of 40 ft. would be referred as 2 TEU. A 40 ft. container may also be referred as 40 ft. equivalent unit (FEU). The dimensions and capacity of marine container are as under :

Type	20' (8'.6" High)	40' (8'.6" High)	40' (9'.6" High)
No.	R2-164	R4-127	R4-135
External Length	6,058MM (19' 10")	12,192MM (40'.0")	12,192MM (40'0")
External Width	2,438MM (8' 0")	2,438MM (8' 0")	2,438MM (8' 0")
External Height	2,591MM (8' 6")	2,591MM (8' 6")	2,896MM (9' 6")
Internal Length	5,568MM (18' 3")	11,673MM (38' 3")	11,673MM (38' 3")
Internal Width	2,268MM (7' 5")	2,244MM (7' 4")	2,244MM (7' 4")
Internal Height	2,240MM (7' 4")	2,199MM (7' 2")	2,492MM (8' 2")
Capacity	28.3M3 (1,000 CFT)	57.7M3 (2,036CFT)	65.3M3 (2,305CFT)
Pay Load	21,060KG (46,430 LBS)	25,630KG(56,510LBS)	25,900KG(57,110LBS)
Gross Weight	24,000KG(52,910LBS)	30,480KG(67,200LBS)	30,480KG(67,200LBS)

8.3.3 Advantages of Containerisation

There are several advantages of containerisation to the shippers and the shipowners. These can be summarised as follows:

To Shippers

1 Saving in handling cost
2 Door-to-door delivery system
3 Saving in port charges
4 Reliable and quick delivery
5 Reduced warehousing/inventory cost
6 Reduced acceptability to damage, loss and pilferage
7 Reduced packing cost
8 Reduced insurance cost
9 Reduced documentation
10 Leverage towards better marketing

To Shipowners

1 Reduction in cost
2 Full control of cargo
3 Improved turnaround time

4 Increased carrying capacity

8.3.4 Disadvantages of Containerisation

1 The fact that containerisation is capital intensive, the shipowner has to incur heavy costs on container ships, containers, and some mandatory support facilities without which it would become impossible for a container operator to operate his vessel. As a matter of fact, the cost of a container ship capacity 6000/6500 TEUs is phenominal and runs in billions of dollars. As for the containers, a 20 ft. container costs approximately Rs 1,75,000 and a 40 ft. container costs approximately Rs 3,25,000. A liner operator operating on multi-trade lane basis has to maintain adequate inventory which runs into lakhs of rupees. In addition, for effective container operation, container operator has to have his own container terminals or yards at all major ports as well as some support arrangements.

2 For effective tracking movement of containers a comprehensive EDI network is essential.

3 Ideally, a container which arrives with import cargo should be utilised for export cargo. But, due to intense competition within the industry and the fluctuating international supply and demand, this ideal situation is rarely achieved.

4 There is a social implication such as labour displacement.

5. For movement by road, conformity with road traffic regulation is also required.

During the pre-second world war days when the merchandise was transported in break-bulk in conventional ships, the liabilities defined in the international convention towards Carriage of Sea Goods Act, 1924 was found to be adequate. But, with the arrival of containerisation, the various clauses of the applicable convention were found to be inadequate. Hence, it was deemed expedient to either modify the existing convention or come out with a new legislation enacting the carriage of goods by container. This problem was overcome by the Brussels Protocol of 1968 which came into force on 23rd June, 1977. Adequate clauses were inserted to fix liabilities and responsibilities of the ship owner in case of carriage of goods through containers.

The Indian Standard Organisation standardized the size of the containers for facilitating their unhampered movement internationally. The liability towards carraige of shipments in containers has been well defined and standardized, and the contracting countries to the various conventions have also to adhere completely to such liability regime. However, India recognised the need of containerisation very late and is almost a decade behind the developed/developing countries unitisation. Estimates show that, in India, only about 20-30% of the containerisable cargo is moved in containers.

Prompt and undamaged arrival of complete shipment at the destination is the main concern of the shipper. So, where commiting his goods to containerised transport the shipper has to take the following precautions :

1 Selecting the proper container service for his purpose;

2 Selecting the right type of container for his goods;

3 Inspecting the container to ensure proper accommodation and protection of his goods;

4 Packing his goods to withstand the hazards of the journey;

5 Stowing and securing his goods in the container to prevent damage to the goods, container and transport vehicle;

6 Properly inventorying and documenting the container contents, locking and sealing the container, and recording container and seal numbers on all shipping documents; and

7 Timely unloading at the destination port.

8.3.5 Types of Containers

Marine container adapatable to carriage by truck chasis, rail-car, barge and ocean going ships is the most common form of containerisation. Marine containers are usually of the following types:

Standard Dry Cargo Container

Dry cargo containers are designed to meet transportation needs of almost all types of general cargo. The dry containers have the following salient features:

a) Each container is built as per the ISO specifications.

b) All containers are inspected and approved by a classification society.

c) All containers are built according to the technological specifications in conformity with TIR/CCC agreements.

d) Each container is designed to not only meet but exceed the standard of strength required by the international convention for safe carriage.

e) To ensure that goods are properly secured, the lashing rings are fitted on the inner container and securing eyes are located close to the door.

f) All aluminium and steel containers are equipped with the lining made of high quality lauan plywood that provide high heat insultation.

g) Through the use of anti-corrosive steel plate rust is kept to the minimum level which helps in cargo being protected from dirt.

h) On the corner of some dry containers, protected by baffle plat container, there are breathing holes which are essential for equalization of inner/outside temperature specially when the ship is crossing latitudes very fast. With the change in latitudes the temperature changes, and, when a ship is on northerly or southerly course the changes in latitudes are very rapid which results in changes of temperature very fast. This creates variance between inside temperature and outside temperature and if the equalization process takes too long, there is a possibility of sweating which can damage the cargo. For balancing temperature, such breathing becomes essential.

i) Containers are water-tight and strong enough to withstand rough handling and transportation through inclement weather conditions.

j) The maximum pay load is indicated on or near the door. However, the maximum pay load should not be the sole criteria in filling the container to its capacity because, in some countries, the road regulations have permissible pay load which may be less than the maximum pay load.

Standard dry containers are usually of the sizes of 8x8, 5x20 and 8x8, 5x40. There are also containers of 8x9, 5x40, and recently containers of size of 8x9,5x45 have also been developed. Referring to the Table given earlier, it would be observed that the maximum pay load for 8'x8' 6"x20' steel container is 21,060 kg. Where as the maximum payload of 8" x 8", 6" x 40" steel container is 25,630 kg. While the inner capacity of 20' steel container is 33.1 CBM the inner capacity of 40' steel container is 67.5 CBM. In terms of volume, the 40 unit is almost double of the volume of 20 unit. But, in terms of weight, the payload of 40' unit is only 25% more than the 20' unit. This means that the 40' unit is idealy suited for transportation of voluminous cargo. A 20' unit is suited to carry heavy weight cargo.

Refrigerated Container

These containers are designed to transport frozen or chilled cargo such as fruits, vegetables, meat, fertilizer and chemical product. Following are the main features of refrigerated containers :

a) The inner walls are entirely covered with stainless steel to prevent the cargo smelling or getting contaminated.

b) Each unit is designed for even circulation of cool and fresh air throughout the container. The fresh air supply is adjusted by the unit's ventilation control.

c) Voltages are either 220 volts or 440 volts, and the desired temperature can be maintained through a variety of power sources including an engine generator which is set while on road.

d) The temperature setting varies from 20 degrees C to +20 degrees C and is recorded automatically.

e) When required, freshmess is easily maintained as select units can seal gas (mainly Nitrogen) as well as control the density on Oxygen and Carbon Dioxide.

f) Refrigerated containers are in both 20' and 40' sizes with height of 9' . 6".

Bulk Container

These containers are designed to save time and labour in the transportation of bulk cargo e.g., grain, fertilizer or other raw materials. The salient features of these containers are :

a) Each container has circular hatches in the roof for top loading of bulk cargo. In addition, a small discharge manifold prevents accidental discharge due to cargo crumpling when the door is opened. These containers provide fumigation systems which conforms to the international sanitary regulation and thus fumigations can be undertaken while the cargo is inside the container.

b) While loading free flowing bulk cargo such as urea and grains, it is desirable to load container to its maximum pay load and with the cargo evenly trimmed so as to eliminate the possibility of shifting during container handling.

Flat Rack Container

These containers are designed for handling long and heavy cargo and have the following features :

a) With no roof and no side wall, these containers can be loaded from any direction and can load over gauge and over height cargo.

b) Each container is equipped with specially reinforced floor construction to support the concentrated load of heavy cargo and strong lashing rings of cargo security.

c) Flat rack containers are available in both 20' and 40' sizes.

Open Top Container

These containers are designed for cargoes that are to be handled with overhead cranes or high masted forklifts and have the following features :

a) A removal door header is situated at the upper part of the container door. This ensures simple operation for handling voluminous cargo as well as heavy ones.

b) A strong canvas, instead of a roof, covers the container top. This canvas corresponds to ISO specifications and meets the requirements of the classification society, and is water proof.

c) Strong lashing rings are provided for securing cargoes.

Tank Container

These containers are built to provide safe and efficient transport of liquids and gases. These units consist of high quality steel tank in a steel frame. The salient features of tank containers are as follows :

a) A loading device, cargo measuring scale, air vent valves, safety wall and manhole are built in the tank top.

b) Valves in lower part of the tank allow liquid to be discharged by container cuplings, and valves are so designed as to prevent the chances of mixing liquid with foreign material.

c) Specific containers provide tank with thermal insulations as well as heating equipment.

d) Tank containers are specially approved for transportation of dangerous material.

Side Loading Container

Such containers are equipped with side doors for use in stowing and discharging cargo. When it is not practical to use end door container, say, when container is required to remain on rail car, the cargo can be easily placed on, or removed from, such containers.

Check Your Progress A

1 What is unitisation?

.....

.....

.....

.....

2 What is the main purpose of containerisation?

.....

.....

.....

.....

3 State the precautions a shipper must take while committing his goods to containerised transport.

.....

.....

.....

.....

4 State whether the following statements are True or False.

i) Unitisation is based on the concept of door to door technology.

ii) Containerisation is the most versatile of all unit load system.

iii) Loading on conventional ships involves multiple handling.

iv) India has been very prompt in adopting containerisation and is far ahead of the developed and other developing countries in this regard.

v) The maximum pay load should not be the sole criteria in filling the container to its capacity.

vi) Tank containers are used for dry bulk cargo.

8.4 INTER-MODALISM AND MULTI-MODALISM

Inter-modal transportion is defined as the movement of international containerised freight from a shipper's premises to consignee's warehouse by capitalising on the advantages of different transport modes enroute such as roadways, railways, shipping and port terminals. The single objective of the concept is to transfer international trade merchandise in a continuous flow through transport service from its origin to final destination. The most significant feature of this concept is the carrier's ability to provide the shipper with a single rate reflected in the through bill of lading for the entire journey.

As explained earlier, this concept oblitrates the requirement of shippers to interact with the various transport operators who provide service between the place of origin and the destination. Since under inter-modal transport system the carrier assumes the complete responsibility liability from its origin to destination, there is, of no necessity for a shipper to be bothered about the transfer of his goods from one mode of transport to another during transit.

Multi-modal transportation, on the other hand, can be defined as carraige of goods by at least two different modes of transport. Multi-modal transportation is essential for efficient movement of containerised cargo and is considered as an integral part of 'Just in Time' (JIT) logistics management in international trade. This may also involve transportation of cargo from shipper's warehouse to consignee's warehouse under the over all responsibility of an operator.

Under the Multi-Modal (MT) Convention, the multi-modal transport operator (MTO) is made responsible independent of the rules which apply to the actual carrier. In other words, as per MT Convention, the MTO has to assume the responsibility of the whole transport covered by the contract. A multi-modal transport operators issues combined transport documents because he assumes the responsibility for the performance of the combined transport contract.

The basic objective of multi-modal transportation is to move cargo from its origin to destination in the minimum possible time and with minimum cost using a combination of various modes of transport and resorting to transhipment of transfer links. Thus, it is not only a mechanical exercise of transferring goods from one mode of transport to another or from one carrier to another, but also implies coordination of various functions, complete willingness to abide by the relevant rules, accept liability or loss of goods, and deliver the goods in time or pay suitable compensation for delays. In other words, it is tentamount to a total integrated transport service to shipper.

The multi-modal service charges may be fairly high. But, taking into consideration the saving in total time and the convenience in transport, the shipper feels it is still preferable. During the last three decades, multi-modal transport has made rapid progress in countries

such as USA, Japan, and Europe. This is primarily due to the various advantages it offers to the users.

Multi-modalism makes it possible to ship goods from the inland countries right under the supervision of exporters. It also enables quick realisation of sales proceeds because the combined transport document which is in the form of a bill of lading that can be negotiated. The chances of pilferages are minimal and, last but not the least, it saves packing cost and time involved.

In the Indian context, this concept is idealy suited due to the varied commodities in the export/import basket. The general cargo, both import and export, are most suited for multi-modal transport system. The Government of India is aware that multi-modal transportation has tremendous potential and, if exports have to grow, it is necessary to develop infrastructure for multi-modal transportation system.

Goods can be moved in the course of international trade in one of these combinations. The first combination is when two or more sea carriers are required to enable the goods to reach the destination. For example, when containers are loaded at Calcutta in smaller vessels or barges and taken to Haldia from where the containers are transferred to mainline container ships for onward carriage to a port in U.K. The same exercise can be performed in the reverse direction. This type of transport is usually called 'through transport'. Other carriers of the goods from the Hinterland to the port of shipment and from the port of discharge to the factory or warehouse of the buyer are not a part of the chain. The second combination is when two or more different types of carriers are required to bring the goods from the originating location to the final destination. Here, different modes of transport are used such as sea, rail, road and inland waterways. The international chamber of commerce defines such carriage as combined transport. It is presumed that under this system all the carriers are connected with each other for the satisfactory performance of a particular contract of carriage. The cargo moves under one single document which is the form of bill of lading. This bill of lading is called combined transport document and is mostly issued by or on behalf of the first carrier, who takes charge of the goods somewhere in the Hinterland.

Advantages of Multi-modal Transportation

The economic and commercial advantages of multi-modal transportation are enormous and it helps in making international trade competitive due to reduction in the overall transportation cost. Some of the benefits of multi-modal transportation could be listed follows:

1 reduces transportation cost;
2 helps faster cargo flow;
3 enhances export potential;
4 facilitates of export of non-traditional goods;
5 reduces uncertainty in transportation cost
6 reduces congestion;
7 reduces inventory levels by stable supply of imports;
8 facilitates optimum utilization of national infrastructure;
9 reduces paper works by simplifying custom procedures; and
10 effect improvement of GNP through more economic activity on national highways and sea/land interface.

8.5 INLAND CONTAINER DEPOTS AND CONTAINER FREIGHT STATIONS

With the expansion of containerisation and the development of multi-modal transportation system, marine containers are now penetrating inland destinations in large volumes than ever before. The major factors behind establishment of Inland Container Depot (ICD) throughout the world are : (a) Constant need to improve the efficiency of inland transportation, and (b) the need to reduce congestion around the major ports which may be the result of lack of available back up space for handling growing container traffic. Thus, the establishment of ICD facility has two objectives : (1) to relieve the congestion constrain at the ports, and (2) to maintain

continuous flow of container traffic and thereby achieve improved economic of cargo distribution by bringing container closer to the Hinterland areas.

An inland container depot is essentially a dry port where containerised cargo is aggregated and consolidated with stuffing and destuffing of containers. **An inland container depot can therefore be defined as a customs declared area for facilitation of import/export.** In fact Section 7(AA) of Customs Act, 1962 defines an Inland Container Depot for the purpose of loading/unloading of export/import cargo as notified through the official gazette. **Container Freight Station (CFS), on the other hand, may be described as the international trade receiving point which serves as the satellite to inland container depots.** One of the important functions of container freight station is to consolidate small shipments of LCL (Less than Container Load) with different origins and destinations into larger unit or FCL (Full Container Load). This facility is specially meant for small shippers who are unable to arrange export clearance through hinterland since the inland container depots facility is mainly used for full container load. At Container Freight Station, after the container is filled, it is sealed by the customs and then, through road transport, it is despatched to the hub centre ICD, from where it is hauled by rail to the gateway port for loading on the ship. Thus, an export shipment, till it reaches the destination port, covers various modes of transportation.

A container freight station can minimise the transportation cost by exploiting the economy of movement in full container load. The container freight station may or may not be connected with a rail head but, since it is a satellite to the hub centre ICD, it is always connected by road with such inland container depots. Similarly, the inland container depots are always connected with the gateway ports through the railway network. Container freight stations are also developed near the port and serve as aggregation centres. Till recently, most of the container freight stations in India were owned and operated by the government agencies. In 1980, the major Ports Reform Committee suggested that while the inland container depots could continue to be managed by organisations either in the public sector or the joint sector, the container freight stations may be managed by private sector under licensing arrangements.

Multi-modal transport basically needs a set of conditions and a conducive environment to succeed. If the volume of international trade of a country is large and the composition of export/import basket full to its capacity, the concept of multi-modal transport gets defeated if the ICD/CFS facility, whether owned by the government or private sector, are not established at the interior port which are cargo sensitive. The infrastructure of these facilities should be modern and efficient, capable of expanding alongwith growth of multi-modal transportation.

8.6 LAND BRIDGING

The development of land bridges is perhaps one of the most significant manifestation of inter-modal integrated transport system. The concept of land bridging signifies the utilisation of land transport for a part of what would normally be an ocean voyage. The purpose of transportation through land bridges is to achieve saving in transportation cost and reduction in international transit time. The saving in inland transportation cost induces ocean carriers to seek economies of scale in inland movement by concentrating traffic at limited number of ports. In this way, the carriers can penetrate the Hinterland with high volume with specified overland route.

The concept of land bridging became possible through the introduction of inter-modal transport system. This concept has been successful in several parts of the world such as Canadian Land Bridges, Trans-Sibberean Land Bridge and Mexico and the Middle East. The most famous land bridge is the Sibberean Land Bridge. These land bridges function as follows:

Container vessels from Japan arrive at the Eastern Russian Ports. The containers are loaded on Sibberean Railway to Moscow and, from there, by truck to their final destination in Western Europe. Alternatively, the containers are hauled by train to multiple destinations in the Eastern/Western Europe/ Scandinavian and Middle East.

In India the concept of land bridging has not yet been promoted. But, it is reported that the Railway Ministry is contemplating the promotion of this concept by connecting Mumbai

with Chennai and thereafter Kolkata with Chennai. However, the places where containe handling facilities have been established in India are as follows :

1 Ludhiana
2 New Delhi (Tuglakabad)
3 Patparganj, Delhi
4 Guntur
5 Anaparti
6 Guwahati (Amingaon)
7 Bangalore
8 Coimbatore
9 Panipat
10 Moradabad
11 Ahmedabad
12 Hyderabad
13 Pune
14 Port side Container Terminal at Wadi Bunder, Mumbai
15 JNPT Port (Import) Mumbai
16 Kalamboli (Export) New Mumbai
17 Bhandup, Mumbai
18 Mulund, Mumbai
19 Port side Container Terminal at Tondiarpet, Chennai
20 Royapuram, Chennai
21 Viriggambakkam, Chennai
22 Jaipur
23 Jalandhar
24 Shalimar, Kolkata

Check Your Progress B

1 What do you understand by inter-modalism?

.....

.....

.....

.....

2 State the basic objective of multi-modal transportation.

.....

.....

.....

.....

3 What is the main function of a container freight station?

.....

.....

.....

.....

4 Fill in the blanks.

i) Multi-modal transportation can be defined as carriage of goods by ..... different modes of transport.

ii) The main feature of inter-modalism is the carrier's ability to provide the shipper with a ..... for the entire journey.

iii) An inland container depot is essentially a ..... where cotainerised cargo is consolidated with stuffing and destuffing of containers.

iv) A container freight station is always connected by road with ..... .

v) The concept of land bridging signifies the utilisation of ..... for a part of what would normally be an ocean voyage.

8.7 LET US SUM UP

The theory of unitisation is based on the principle of increasing the size of unit load and reduce the handling and transportation cost. Till the end of the Second World War, the trading of finished/semi-finished products through sea route used to be in break-bulk form in conventional ships which, upon completion of loading, would sail to the various nominated ports and discharge cargo as per port rotation.

Multiple chain of transportation involving movement from shipper's premises to port warehouse, from port warehouse to ship, from ship to transshipment port warehouse, from transhipment port warehouse to second ship, from ship to discharging port warehouse, and from discharging port warehouse to buyer's warehouse results in multiple handling of cargo resulting in damages/pilferages to the shipment. Hence, the underwriters, while accepting the liability, would charge high premium which resulted in high cost of products. However, during the late 60's the concept of containerisation was evolved which resulted in not only warehouse to warehouse delivery, but also elimination of multiple handling/pilferage/ damage. This helped insurance premiums to come down and make the prices of products competitive. The main problem in containerisation is that is is highly capital intensive because, to achieve a proper and effective transportation through containerisation, an efficient back up infrastructure is essential which involved huge investment.

Today, there are special containers for transportation of various products, and the products like liquid bulk/dry bulk which tranditionally move on tramp ships can also be transported through containers specially designed for this purpose. The marine containers have internationally accepted measurement and are made according to the international specifications with due consideration to multi-modal transportation rules.

One distinct advantage of unitisation has been that it has promoted multi-modal transportation. Multi-modal transportation system is a means of transportation whereby the supplier hands over his cargo to the carrier at his warehouse in a unit load, and the carrier undertakes to transport the same to the buyer's warehouse. Such transportation may involve the combination of various modes such as road/rail/sea or road/air/sea or rail/sea, etc. The distinct advantage of multi-modal transportation is that the container is vanned and sealed in shipper's premises and destuffed in buyer's warehouse. This completely eliminates handling during transit and, resultantly, the possibility of damage or theft. Furthermore, the movement through multi-modal transportation in fact which helps the supplier and the buyer in adequate rotation of their orders.

Multi-modal transportation popularity is gaining momentum and very soon 100 per cent of the finished/semi-finished products will be moving under multi-modal transportation arrangements.

8.8 KEY WORDS

Bulk Container : A container with circular hatches in the roof for top loading of bulk cargo.

Commodity Box Rates (CBR) : A lump sum payable for carriage of a container stuffed with a particular commodity.

Combined Transport Document (CTD) : A document issued by MTO which evidences a multi-modal transportation contract.

Containerisation : Use of containers to facilitate the carriage of goods by one or more modes of transport without intermediate de-stuffing and stuffing of container and to frucify the concept of door to door delivery.

Container Freight Station (CFS) : An international trade receiving point which serves as the satellite to inland transport depots and consolidates small shipment of LCL.

FCL : Full container load with different origins and destinations into larger unit or FCL.

FCL/FCL : A container service where the merchant is responsible for both stuffing and tripping.

FCL/LCL : A container service where the merchant is responsible for stuffing and the

MTO/ carrier is responsible for stripping.
FEU : Forty feet equivalent unit.
Flat Rock Container : A container with no roof and side walls so as to facilitate loading from any side for convenient handling of long and heavy cargo.

Inland Container Depot (ICD) : A dry port where containerised cargo is consolidated with stuffing and de-stuffing of containers. It is a customs declared area for facilitation of import/ export.
Inter-modalism : Movement of international containersed freight from a shipper's premises to consignee's warehouse using differrent modes of transport enroute.

LCL : Less than container load
LCL/FCL : A container service where MTO/ carrier is responsible for stuffing and the merchant is responsible for stripping.
LCL/LCL : A container service where the MTO/ carrier is responsible for both stuffing and tripping.

MTO : Multi-modal Transport Operator who acts as the principal for the performance of the transport contract and provides for the different modes of transport and offer services required for expeditious and safe transportation of goods to its destination.
Multi-modalism : Carriage of goods by at least two different modes of transport.

NVOMTO : Non-vessel Operating Multi-modal Transport Operator, not having their own ships.

TEU : Twenty feet equivalent unit.

Unitisation : Increasing the size of unit load to reduce the handling and transportation cost.

VOMTO : Vessel Operating Multi-modal Transport Operator having their own ships

8.9 ANSWERS TO CHECK YOUR PROGRESS

A 4 (i) False (ii) True (iii) True (iv) False (v) True (vi) False

B 4 (i) at least two (ii) single rate (iii) dry port (iv) hub centre ICD (v) land transport

8.10 TERMINAL QUESTIONS

1 Enumerate the limitations of conventional ships and discuss how containerisation has helped in overcoming these constraints.

2 Describe the advantages of containerisation to the shippers and the ship-owners. Also state its disadvantages, if any.

3 (a) What are the various types of marine containers? Describe the salient features of any two of them.

(b) You have 40 MT wheat in bags and 20 MT wheat in bulk. Indicate the type and number of containers you would require.

4 Distinguish between:

(a) Inter-modalism and Multi-modalism

(b) Inland container Depots and Container Freight Stations.

(c) Flat Pack Containers and Open Top Containers

5 "During the last three decades Multi-modal Transportation has made rapid progress". While commenting on the statement explain how has the multi-modal transportation benefitted the movement of merchandise through Hinterland.

6 Explain the concept of land bridging and state its advantages in the Indian context.

7 Your factory is located at Hapur. You have received an order of full container load from your buyer in Los Angeles and the order is to be executed through the port of Mumbai. Detail off the routing and prepare a formal communication to your buyer justifying the selection of routes made by you.

UNIT 9 WORLD SEABORNE TRADE AND WORLD SHIPPING

Structure

9.0 Objectives
9.1 Introduction
9.2 World Economic Situation and World Trade
- 9.2.1 World Output
- 9.2.2 Merchandise Trade
- 9.2.3 OECD Countries' Industrial Production

9.3 World Seaborne Trade
- 9.3.1 Demand for Shipping Services in Ton Miles
- 9.3.2 World Seaborne Trade by Country Groups

9.4 World Shipping Scenario
- 9.4.1 Composition of World Fleet
- 9.4.2 Distribution of World Fleet
- 9.4.3 Distribution of Fully Cellular Container Ships
- 9.4.4 Age Distribution of World Fleet
- 9.4.5 Ownership. Distribution of the World Fleet
- 9.4.6 Most Important Maritime Countries and Territories
- 9.4.7 Foreign Flag Registry and the Major Open Registries
- 9.4.8 Distribution of Total Freight Cost in World Trade (Imports)

9.5 Issues of Concern to Developing Countries
9.6 Negotiations in Maritime Transport
9.7 Let Us Sum Up
9.8 Key Words
9.9 Answers to Check Your Progress
9.10 Terminal Questions

9.0 OBJECTIVES

After studying this unit, you should be able to:

- explain the relationship of world economic development and seaborne trade
- describe the trends in world seaborne trade by types of cargo and by country groups
- explain the composition of world shipping and its distribution by groups of countries
- explain why developed countries register their ships in open registry countries
- outline the issues confronted by developing countries in the development of their fleet
- identify the problems of land-locked countries in the shipment of their cartgo.

9.1 INTRODUCTION

In Unit 2, you learnt about the significance of ocean transport and the development of commercial shipping. It is a fact that about 75% of the international goods traffic moves through sea route, accounting for almost two-thirds of the value of world trade. This implies that any fluctuations in international trade is bound to have impact on the volume of world seaborne trade which, in turn, shall influence the fortunes of world shipping. In this unit, you will learn about how changes in economic scenario have influenced the growth and composition of world seaborne trade and the world shipping scenario.