

EAC CU 007

FREIGHT CLEARING AND FORWARDING PROCEDURES

Course Description

Explains and introduces trainees to:

- Freight Forwarding services
- Documents and documentation of import and export
- Key legal rights, duties and responsibilities of a forwarder
- Internal and external organisational environment
- Forwarder relations to other parties

- Warehousing, packaging and packing
- Handling of dangerous goods
- Cargo clearance procedures at the front office
- Documentation and carriage of goods under the various transport modes
- Computation of freight rates

Course Objectives

At the end of the course the trainees must be able to:

- Identify the scope of clearing and forwarding, the field environment including rights, duties and responsibilities of a freight forwarder
- Outline usage of import, export documents and associated terms in relation to C&F operations aspects of international trade
- Appreciate the legal context /implication of various documents used in import-export and their sources
- Demonstrate ability to perform consolidations and plan intermodal journeys for containerised and conventional cargo

- Demonstrate general knowledge on the handling and classification of dangerous cargo under various transport modes
- Appreciate outcomes of international conventions and their application
- Identify procedures relating to clearance and forwarding cargo in international trade
- Appreciate the essence of warehousing, packaging and packing of goods

- Apply relevant conversion units and formulas in the computation of freight rates
- Outline and illustrate the constituents of freight rates under different transport modes
- Apply the knowledge in their work

Module 1

Scope of Freight Forwarding Services

Objectives

- By the end of the module, the trainee should be able to:
- Define a freight forwarder
- Outline the role of a freight forwarder in international trade
- Outline services offered by a freight forwarder
- Illustrate the relationship between the freight forwarder and related parties in the shipping industry

1.0 Introduction

i) Background and definition of a freight forwarder

- Originally a commission agent acting on importer/exporter behalf
- Routine tasks e.g. loading, unloading, customs brokerage, storage, local transport services
- No standard definition of a freight forwarder

- **Prof Alan E.Branch** defines, " An entity /company responsible for undertaking export/import cargo arrangements on clients/shippers behalf at a seaport, airport and so on. At seaport it would include collection of freight; collection and issuing bills of lading; notification of arrival and loading of goods;customs,import & export documentation; certificates of shipment; arranging sorting of cargo, cold storage,warehousing,transport to destination including near continent; cargo or damage surveys; Lloyd's/marine agents surveys and so on. Also termed as forwarding agent."

ii) Freight Forwarder's role in International trade

- Provides strategic solutions of long distance product sourcing and movement
- Provides capabilities interfaced across a range of different transport modes
- Offers supply chain management solutions
- Delivery and customs clearance
- Cargo handling and distribution management
- Intermodal transport services
- Consultancy/advisory services on international trade

- Mega forwarders have increasingly enhanced their role by adapting to changing global logistics scene and investing heavily in information technology and quality trained committed staff

iii) Relationship to the Industry

Relationship with:

- Government and other Public Authorities
- Consignor
- Consignee
- Cargo Insurers
- Carriers and other agencies
- Port Authorities

2.0 Scope of Services

i) On behalf of the Consignor (Exporter)

In accordance with exporter shipping instructions the forwarder would:

- Book space with carrier
- Choose route
- Take delivery
- Arrange warehousing

- Note damages/loss Weigh and measure cargo
- Advise on insurance
- Monitor cargo movement
- Study L/C provisions
- Transport the goods

- Pay fees and other charges
- Attend to foreign exchange transactions
- Arrange for transshipment

ii) On behalf of the Consignee

- Receive and verify relevant documents
- Monitor cargo movement
- Take delivery
- Arrange customs clearance
- Assist in pursuing claims
- Warehousing and distribution

iii) Other Value Added Services

iv) Special Cargoes e.g project cargo, garment hanging services, overseas exhibition

v) Inventory and Supply Chain Management

Module 1 Sample Questions

- Outline the role of a freight forwarder in international trade
- Discuss the freight forwarder's relationship with the other parties in the logistics chain

Module 1 Further Readings

- Alan E.Branch 1995:Dictionary of Shipping International Business Trade Terms and Abbreviations-London,Witherby & Co.Ltd
- Alan E.Branch 1999: Export Practice and Management-London, International Thompson Business Press

Module 2

Rights ,Duties and Responsibilities

Objectives

By the end of the module the trainees should be able to :

- Outline the legal status of a freight forwarder
- Outline the essence of international conventions
- Highlight key issues and differences in international conventions
- Outline the rights and duties of a freight forwarder when acting as agent and as principal
- Identify common articles in a freight forwarder's standard trading conditions based on FIATA model

1.0 Legal Status of a Freight Forwarder

- i) Common Law Countries
- ii) Civil Law Countries

2.0 Standard Trading Conditions

- Usually formulated in accordance with the commercial practice or legal system prevailing in each country.
- In some countries they are based on the FIATA model founded in 1926
- One of the essential means of improving and maintaining professional standards of the forwarding industry
- Although conditions vary from country to country, a forwarder is expected to:
 - a) Take reasonable care of goods entrusted to him
 - b) Comply with instructions of his customer in matters relating to their transportation

c) Avoid committing himself to any firm date of delivery at destination and has usually right to lien and detention over the goods in the event of customer's failure to pay for his duties related to the job (particularly freight) pertaining to those particular goods as per contract.

i) Rights, duties and responsibilities of the forwarder as an agent

As agent forwarder generally accepts liability of:

- Own fault and his employees/servants
- Routing to the wrong destination
- Errors during customs operations
- Delivery of goods contrary to instructions
- Surcharge resulting from unnecessary delays on the forwarder's part

- Re-export without compliance to formalities
- Generally does not accept liability for acts or omissions of third parties (such as carriers, re-forwarders, etc) provided he has shown proper care in the choice of third parties

ii) Rights, duties and responsibilities of the forwarder as principal

- Assumes responsibility in his own name
- Liable for acts and omissions of carrier etc
- Negotiates with his customer a price for his services instead of receiving a commission
- His liability to third parties, right to limitation of liability and right to exercise lien remain same as in his role a agent
- In case of MMT contracts the ICC rules on combined transport generally apply rather than the standards trading conditions

3.0 International Conventions

- i) On cargo shipped by sea
 - Hague rules 1955
 - Hague-Visby rules 1968
 - Carriage of goods by Sea Act 1971
 - Hamburg rules 1978

ii) On cargo shipped by air

- Warsaw 1929
- Hague protocol 1955
- Guadalajara Convention 1961
- Carriage of Goods by Air Act, 1961

Module 2 Sample Questions

- Discuss the rights and duties of a freight forwarder when acting as **a)** an agent **b)** a principal
- Highlight the key issues arising in international conventions with regards to **a)** carriage of goods by sea **b)** carriage of goods by air

Module 2 Further Readings

- Alan E.Branch 1995:Dictionary of Shipping International Business Trade Terms and Abbreviations-London,Witherby & Co.Ltd
- Brussels Convention 1955
- Hamburg Convention 1968
- International Chamber of Commerce rules
- Warsaw Convention

Module 3

Freight C&F Documentation and Front Office Procedures

Objectives

By the end of the module, the trainees should be able to:

- Identify various documents and their use ,source in import-export and international transport/freight forwarding
- Outline the legal context of various documentation in freight forwarding
- Outline the role and procedure of front office operations in the freight forwarding industry

1.0 Types of Bank documents and their usage

- Import Declaration Form (IDF)
- Bill of Exchange
- Letter of Credit

2.0 Shipping documents and their usage

Sea:

- Standard Shipping Order
- Mate's Receipt
- Bill of Lading
- Shipper's Declaration of Dangerous Goods
- Stowage Plan and Stowage Order
- Certificate of Origin
- Charter Party

Air:

- Shipper's Declaration of Dangerous Goods
- Cargo Manifest
- Commercial Invoice
- Cargo Arrival Notice
- Airway Bill

Module 3 Sample Questions

- Briefly describe the function, legal context and source of two i) Bank documents ii) Airfreight documents iii) Sea freight documents used in international trade

Module 3 Further Readings

- Alan E.Branch 1999:Export Practice and Management-International Thomson Publishing
- Alan E.Branch 2000:Shipping and Air Freight Documentation for Importers and Exporters and Associated Terms-Witherby
- Dennis Bager ,Ralph Bugg and Geoffrey Witehead,1993 International Physical Distribution and Cargo insurance – Woodhead-Faulkner(Publishers) Limited

Module 4

Environment of C&F activities in relation with intervening parties

1.0 Internal Environment

- i) **Internal Environment:** An aggregate of all inside factors that influence the operations and performance of the organisation from within

- ii) **Elements of the Internal Environment;**
 - Organisational charters and guidelines
 - Limited Resources
 - Organisational Rules
 - Constraints imposed by higher-level managers, Customs and culture

2.0 External Environment

- i) **External Environment:** The constrained that are imposed from outside the organization and are generally beyond the control of the organization

- ii) **Intervening Parties**
 - Government and other public authorities

 - Private parties

Module 4 Sample Questions

- Define and differentiate the terms internal and external environment
- Outline the elements within an internal environment

Module 4 Further Readings

- Charles Handy (Various publications on Human Resource Management)
- John Storey (Various publications on Human Resource Management)

Module 5

Dangerous Goods

Objectives

By the end of the lessons the trainee should be able to demonstrate an appreciation of the following aspects;

- Classification
- Safe packing (containment)
- Hazard warning signs
- Documentation
- Safe transport operations
- Safe stowage
- Segregation of incompatible goods

Classification

- Assignment of goods to hazard classes according to defined criteria
- Clear identification by UN-number
- Frequently transported goods mentioned by name in dangerous goods list
- Generic entries (n.o.s. – shipping names) to assign goods not listed by name

Safe packing

- Type performance test and type approval for dangerous goods containments
- Packing instructions indicate the types of packaging suitable for each specific dangerous good

Hazard warning signs

- Hazard labels and marking on packages
- Placards (enlarged labels) on cargo transport units

Documentation

- Transport document containing all information about the dangerous goods
- Shippers declaration
- Container / vehicle packing certificate (sea transport only)
- Emergency response information

Safe Transport Operations

- Fire extinguishing equipment
- Explosion proof electrical installation
- Miscellaneous additional technical requirements
- Emergency response equipment
- Specific training of personnel
- Personal protective equipment

Stowage and segregation

- Protection of packages against shifting and damage
- No transport of extremely hazardous goods on passenger ships and passenger aircrafts
- Restricted stowage „on deck only“ for some highly hazardous goods (sea transport)
- Segregation of goods reacting dangerously with each other

Intermodal Dangerous Goods Regulations

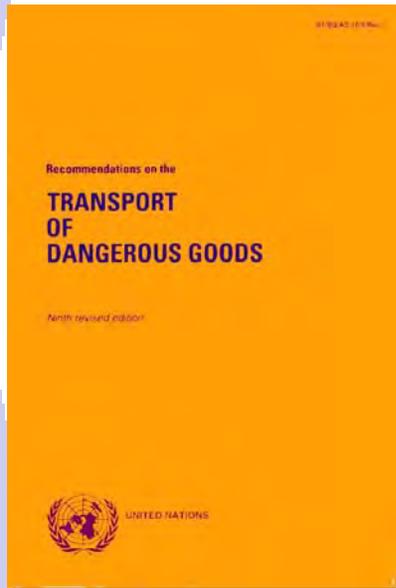
- International transports concern various modes of transport
- International regulations necessary
- Regulations need to be applicable for all modes of transport as much as possible

UN model regulations

- Developed by UN economic and social council – committee of experts on the transport of dangerous goods
- Addressed to governments and international organizations concerned with regulations for dangerous goods
- Not applicable for bulk transport of dangerous goods in ships

UN model regulations

- Basic scheme of provisions allowing uniform development of dangerous goods regulations for the various modes of transport
- Contribution to worldwide harmonization of transport regulations

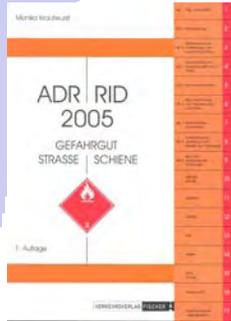


The UN model regulations („Orange Book“) contain the basic requirements for the transport of dangerous goods.

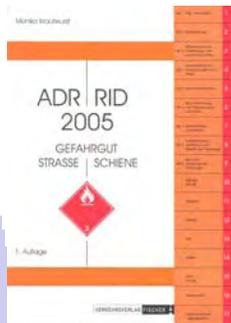
All international DG regulations (i.e. IMDG, ICAO, IATA, 49CFR, ADR, RID, ADNR) are based on these model regulations

Basis

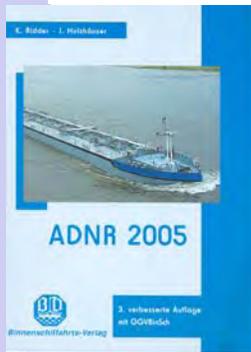
Road:
ADR



Rail:
RID



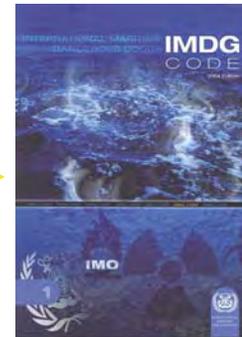
Barge:
ADNR



Air:
IATA/ICAO



Sea:
IMDG-Code



USA
49 CFR
Part 178



Manual of tests and criteria

- Uniform test methods to arrive at proper classification of substances and articles for transport
- Part I: explosives
- Part II: self reactive substances and organic peroxides
- Part III: material of classes 3, 4, 5.1 and 9

Hazard classes

- class 1 explosive substances and articles
- class 2 compressed, liquefied or dissolved gases
- class 3 flammable liquids
- class 4.1 flammable solids, self-reactive substances
- class 4.2 spontaneous combustible substances
- class 4.3 water-reactive substances
- class 5.1 oxidizing substances
- class 5.2 organic peroxides
- class 6.1 toxic substances
- class 6.2 infectious substances
- class 7 radioactive material
- class 8 corrosive substances
- class 9 miscellaneous dangerous substances and articles

Hazard classes

class	symbol	description
1		Explosive substances and articles
2		Gases
3		Flammable liquids
4.1		Flammable solids, self-reactive substances, desensitized explosives
4.2		Spontaneous combustible substances
4.3		Water-reactive substances
5.1		Oxidizing substances
5.2		Organic Peroxides
6.1		Toxic substances
6.2		Infectious substances
7		Radioactive Material
8		Corrosive Substances
9		Miscellaneous substances and Articles

Subdivision of class 1

Subdivision according to the extent of hazard:

- 1.1 mass explosive substances and articles
- 1.2 substances and articles with projection hazard, not being mass explosive
- 1.3 substances and articles which have a fire hazard and a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
- 1.4 Substances and articles which present no significant hazard
- 1.5 Very insensitive mass explosive substances
- 1.6 Extremely insensitive articles which do not have a mass explosion hazard

Compatibility groups class 1

- Assignment according to the nature of the substance or article
- Designated to determine permitted mixed loading
- Following compatibility groups exist:
A, B, C, D, E, F, G,
H, J, K, L, N, S

Subdivision of class 2

- 2.1 flammable gases
- 2.2 non flammable non toxic gases
- 2.3 toxic gases

Subdivision of class 4.1

- flammable solids
- self-reactive solids and liquids
- desensitized explosive substances

Subdivision of class 7

- excepted package
- category I low radiation level
(< 0.005 mSv/h on the packaging)
- category II medium radiation level
(< 0.5 mSv/h on the packaging)
- category III high radiation level
(> 0.5 mSv/h on the packaging)

Classification of substances not listed by name

According to the properties

- physical state (solid, liquid, gaseous)
 - chemical formulation (e.g. alcohol, ketone, cyanide)
 - explosive properties
 - Flammability
 - liability to spontaneous combustion
 - gas evolution upon reaction with water
 - oxidizing properties
 - Toxicity
 - corrosive effects
 - effect on the marine environment
- assignment by the shipper to the n.o.s. (not otherwise specified) entry which most exactly describes the properties

Classification of substances not listed by name

Special requirements:

- explosive substances and articles
- self-reactive substances
- organic peroxides

Assignment by competent authority

Subsidiary risks

- Substances with multiple hazards
- Mixtures of substances with different hazards

UN-Numbers

- Four digits (class 1 start with „0“)
- Assigned for specific substances or specific groups of substances
- Assigned by UN Committee of Experts on the Transport of Dangerous Goods

Packing groups

Grading according to degree of hazard

- Group I = high hazard
- Group II = medium hazard
- Group III = low hazard

Specific remarks

Packagings for class 1 must comply with packing group II requirements

For classes 2, 6.2 und 7 no packing groups are assigned

In class 9 packing groups are assigned not for all substances and articles

Identification of Dangerous Goods

- UN-Number
- Proper shipping name
- Supplemented by chemical name (if applicable)
- Class
- Subsidiary risks (if applicable)
- Packing group (when assigned)

Examples of proper dangerous goods description

- UN 1830 SULPHURIC ACID, class 8, II
- UN 2902 PESTICE, LIQUID, TOXIC, N.O.S. (draxozolon), class 6.1, II
- UN 1092 ACROLEIN, stabilized, class 6.1 (3), I
- UN 1992 FLAMMABLE LIQUID, TOXIC, N.O.S. (ethanol and toluidine), class 3 (6.1), II

Selection of containments

- packing instruction for each UN-number in dangerous goods list
- packing instructions for:
 - regular packagings
 - large packagings
 - intermediate bulk containers (IBC)
 - tanks
 - bulk containers

Types of containment

- Regular packaging (volume max.450l)
- Large packaging (volume max.3000l)
for inner packagings
- IBC (volume max. 3000l)
for liquid or solid bulk
- Tank (volume not restricted)
for liquid or solid bulk
- Bulk container (for low hazard goods only)



UN 1H1/Y1.8/200/96/B AM 9640-M





Design of regular packagings

Coded design types for:

- Combination packagings
- Single packagings
- Composite packagings

Design of regular packagings

Coded design types:

- 1 = drum
- 2 = barrel
- 3 = jerrican
- 4 = box
- 5 = bag
- 6 = composite packaging

Design of large packagings and intermediate bulk containers (IBC)

Coded design types

- 11 = IBC, rigid, for solids
- 13 = IBC, flexible, for solids
- 21 = IBC, rigid, for solids under pressure
- 31 = IBC, rigid, for liquids
- 50 = Large packaging, rigid
- 51 = Large packaging, flexible

Design of tanks

Provisions for the design, construction, inspection and testing of tanks for:

- Liquids (and solids)
- Liquefied gases
- Refrigerated gases

Performance levels

- Not applicable for packagings for gases, infectious substances and radioactive material
- Not applicable for tanks
- Performance levels are
 - X for packing groups I, II, III
 - Y for packing groups II, III
 - Z for packing group III

Test provisions for regular packagings

- Drop test
- Stacking test

For single and composite packagings designed to contain liquids in addition:

- Leakproofness test
- Internal pressure test

Drop test

- filled up to maximum gross mass or volume
(for liquids by use of water)
- drop height
PG I 1.8 m or $d \times 1.5$ m ($d > 1.2$)
PG II 1.2 m or $d \times 1.0$ m ($d > 1.2$)
PG III 0.8 m or $d \times 0.67$ m ($d > 1.2$)
- No loss of contents
(for combination packagings no leakage from inner receptacles)

Stacking test

- Stacking height including test sample 3m
- Duration
24 hours
- plastic receptacles for liquids: 28 days
- No leakage

Leak proofness test

- Pressurized air (gauge) inside
PG I 30 kPa
PG II 20 kPa
PG III 20 kPa
- Pressure applied 5 minutes,
receptacle under water
- No leakage of air

Hydraulic pressure test

- Hydraulic pressure applied
5 minutes for metal, 30 minutes for plastic
- Test pressure
PG I: 250 kPa
PG II,III: 1.5 times the (internal) vapour
pressure at 55°C,
but minimum 100 kPa
- No leakage

Test provisions for large packagings

- Drop test
- Stacking test
- Bottom lift test
- Top lift test

Test provisions for IBC

- Drop test
- Stacking test
- Bottom lift test
- Top lift test

For IBC designed to contain solids under pressure or liquids in addition:

- Leakproofness test
- Hydraulic pressure test

Test provisions for IBC

For flexible IBC in addition

- Tear test
- Topple test
- Righting test

Drop test (IBC)

- IBC filled up to 95% of permissible gross mass, for liquids up to 98%
- drop height
 - PG I 1.8 m
 - PG II 1.2 m
 - PG III 0.8 m
- No loss of contents

Stacking test (IBC)

- Superimposed load 1.8 times the permissible gross mass of IBC that might be stacked on top
- Duration
depending on type from 5 min (metal)
to 28 days (plastic)
- No permanent deformation

Bottom lift test (IBC)

- IBC filled up to 1.25 times the permissible gross mass
- IBC raised and lowered twice by forklift in defined positions
- No permanent deformation, no loss of contents

Top lift test (IBC)

- IBC filled up to 2 times the permissible gross mass, for flexible IBC 6 times
- IBC lifted in the manner for which it is designed until clear of the ground
- Maintained clear of the ground for 5 minutes
- No permanent deformation, no loss of contents

Leak proofness test (IBC)

- 20 kPa gauge pressure air inside
- Pressure applied 10 minutes
- No leakage of air

Hydraulic pressure test (IBC)

- Hydraulic pressure applied 10 minutes
- Test pressure for metal IBC
PG I: 250 kPa, PG II,III: 200 kPa
- Test pressure for rigid plastic and composite IBC to be calculated according to formula
- No permanent deformation and no leakage

Tear test

- IBC filled up to 95% of permissible gross mass
- Knife cut of 100 mm length, halfway between bottom and top, angle of 45° to principle axis
- IBC lifted clear of the ground
- Cut shall not prograde more than 25% of original length

Topple test

- IBC filled up to 95% of permissible gross mass
- Topple height
 - PG I 1.8 m
 - PG II 1.2 m
 - PG III 0.8 m
- No loss of contents

Righting test

- IBC filled up to 95% of permissible gross mass
- IBC lying on its side shall be lifted at a speed of 0.1 m/s to an upright position
- No damage to IBC or lifting device

Restrictions for plastic receptacles

- Period of use for plastic receptacles is restricted to 5 years from the date of manufacture
- Applicable to plastic drums, plastic jerricans, rigid plastic IBC, composite IBC with inner plastic receptacle
- Month and year of manufacture is marked on each plastic receptacle

Provisions for tanks

- General design provisions
- Minimum shell thickness
- Service equipment
- Bottom openings
- Pressure relief devices
- Test pressure and maximum allowable working pressure
- Design approval
- Periodic inspection

Module 5 Further Readings

- IATA Publications on dangerous goods
- IMDG Code
- Merchant Shipping (Dangerous Goods and Maritime Pollutants) Regulation 1990
- National Road Safety Act
- ICAO Publications on dangerous cargo
- Alan E.Branch 1999 Export Practice & Management

Module 6

Warehousing Packaging and Packing

Objectives

By the end of the session the trainee will be able to:

- Define warehousing and outline its importance.
- Identify different types of warehouse storage system.
- Present on overview of warehousing types and operations.
- Outline key factors to be considered in order to achieve maximum space utilization in warehousing
- Define packaging and packing.
- Outline the importance of packaging and packing.
- List consideration when making packaging and packing choices.
- Outline the importance of marking and labeling.

Introduction

- Ware housing as an important aspect of distribution
- The design and operation of storage facilities is considered very important
- Warehousing includes various responsibilities involved in receiving, storing and shipping goods
- It is part of the logistics chain which is referred to get goods from place where they arise to where they are required in the right quality (form), time and costs

Definition of Warehousing

- The storage and care of goods in an environment where they retain their utility until such time that they are removed either for processing, Storage elsewhere, sale or end use.

Importance

The importance of warehousing lies in its functions and the processes it enables. These include:

- Handling
- Stock piling
- Documentation
- Product mixing
- Consolidation
- Fumigation
- Customs clearance
- Inspection and verification
- etc

Types of goods stored in warehouses

- **Perishable goods:** These require specific control of temperature and other elements of the environment e.g.
 - Vegetables and fruits
 - Adhesive films
 - Some of the plastics
 - Medicines
 - Wine and spirits
- **Non- Perishable or dry goods:** Goods whose conditions remain unchanged over long periods of time e.g.
 - Cereals
 - General merchandise
 - Chemicals
 - Machinery etc.

Warehousing/storage types and operations

- Open yard storage / stock yard storage
 - Mainly used to store goods that are largely unaffected by the weather
 - In some instances, waterproofing maybe necessary e.g. Canvas covering large stacks.

It is suitable for:

- containers (ICDS)
- motor vehicles
- Timber (humidity needs to be controlled)
- Build cargo e.g. coal

- **Covered or shed storage**

Goods are stored in completely built or partially covered warehouse buildings.

Factors considered in the stacking of goods on the warehouse floor:

- Types of packing
- Stack heights and guidelines
- Aisle ways and safety space regulations
- Access points
- Cargo compatibility
- Pillars and other structures in the warehouse
- Regulations relating to various commodities e.g.

Specialized Storage

i). Bulk Storage

- Involves the storage of goods in bulk form
- The storage units are especially designed structures to allow for the preservation of the goods while in storage. Made up of two categories namely:
 - a) Dry bulk storage - for storage of dry bulk cargoes like cereals, fertilizer
 - b) Liquid bulk storage – for storage of liquid bulk cargoes like vegetable oils and petroleum products.

ii) Refrigerated storage

- Type of storage where temperatures are regulated to help control cargo deterioration
- The process is achieved by:
 - Cooling
 - Chilling
 - Freezing

Involves very high capital for installation, insulation and power generation

iii). Hazardous cargo storage

- This is entirely for storage of hazardous goods
- Main categories of hazardous cargoes include
- Flammables
- Explosives
- Corrosives
- Poisons
- Radio active materials
- Oxidizers

These categories are divided into various classes and sub- classes are the handling and storage is governed by the (IMDG) international maritime Dangerous goods code.

iv). Fulfillment Warehouse

- Types of storage which relates to the storage of goods that have very fast turns and are of low volumes.
- Warehouse deals directly with the customer
- Involves complex paper flow

v). Household goods Warehousing

- Specialized type of Warehousing which predominantly deals with used cargoes.
- Serves mainly a removals function and there is no change of title

- **Bonded Storage**

- Normally, is bonded warehousing, relates to cargo stored under customs bond pending of payment of duties and other taxes.

- **Storage Economy**

- For achievement of economy in storage maximum utilization of space is essential.
- Space occupied and height (Volume) form the basis for pricing

Methods of material handling in warehouse

Manual handling

- Most preferred mode of handling goods in a warehouse due to flexibility of man in handling various commodities
- Depends on the strength of Labour force availability, but limited by:-
 - Handling capacity
 - Safety issues (costs)
 - Human labour relation issues
 - Cost of labour based on the parts of world

Equipment

i. Mobile equipment

- These are power equipment with short runs with frequent starting, stopping and maneuvering.
Such mobile equipment include forklift, trucks etc
- The use of forklift trucks is based on:
 - Purchase price
 - Maintenance
 - Cost of down time

Methods of material handling in warehouse

ii) Stationery equipment

- Dock shelters and dock boards subject to impact from vehicles
- Include automatic dock level ramps
- Dock shelter and height
- Choice of equipment is governed by:
 - Flexibility of equipment
 - Type and characteristic of cargo
 - Nature of warehouse building
 - Nature of handling job such as bulk, unitized loads, break bulk, volume etc

- **Conveyor systems** – mainly used in manufacturing to interface between production plant and warehouse
- **Automatic guided vehicle systems** – normally have fixed or charted route and are used to increase cube utilization
- **Fork lift trucks** – are easy to replace

- **Pallets**

- Used as dunnage in warehouses
- Regulated under Commonwealth handling and Equipment pool

Equipment for other forms of handling include:

- Evacuators
- Grabs
- Pumps
- Porkers
- Sorters
- Bulk loaders
- blenders

- **Warehouse Automation**

- Needs good planning and needs assessment to determine right technology due to heavy investment involved

- Could be in form of offloading equipment, AGVS, Bar code identification, stacker crane, conveyor belts

Packaging, packing, marking and labeling

i) Definition and purpose of packaging

- Warehouses receive, handle and store a wide variety of goods.
- Involves designing a product container that will identify the product.
- Concerned with the protection and containment of consignment during transit
- Has a tremendous influence on the mode of handling or stacking

- **Purpose / Function of package**
- Primarily to protect against common hazards of Warehousing and transportation.
- Examples:
 - tacking compression due to multiple handling
 - Shock and vibration
 - Elements of Weather
 - Infestation
 - Loss / theft
 - Information
 - Containment
 - Identification details, Handling instructions or cautions

ii) Guidelines on the choice of packaging

- Cost of packaging as to the strength and suitability of the packaging.
- Size height and potentiality to fire risks.
- Nature of the products (Packaging materials).
- Requirements by the buyer, carrier, or insurer.
- Regulations of the importing country and International conventions.

iii) Consideration when packing

- Freight forwarders demand value added services
- The considerations when packaging include:
- Nature of goods
- Duration of transit
- Letter of credit and other contractual requirements
- Security
- Costs
- Climatic conditions etc

iv) Marking and labeling

- Identifying the brand and provides essential product information regarding contents, size, weight, quantity ingredients, directions.
- Labels also provides the means for automatic check out and monitoring inventory monitoring.
- Universal product code (UPC) an electronic bar code on labels that identify manufactures and products.
- Marking and labeling can be done by the following methods.
 - Handwritten
 - Printed
 - Stenciled
 - Bar code

- **Marking practice**

- Marks and labels should be simplistic consisting of the buyers initials, reference number, destination and package number

- Marks is aimed at safe arrival, speed identification, compliance with official regulations, prevention of damage

- Labels should have name and address of consignor, consignee, warnings/instructions, product information

- **Effects of poor marking and labeling**

- Reduced efficiency / more time during order selection / sorting.

- Possible errors of delay due to identifications problems.

- Customer dissatisfaction arising from the above.

- Rejection in importing country.

Module 6 Sample Questions

- What is warehousing and what are the key factors to be considered during warehousing?
- Identify different types of warehouses
- Outline key factors that enable maximum utilization of space in warehousing
- Outline the effects of poor markings and labeling
- Outline the considerations made when making a packing choice
- Distinguish between packing and packaging outlining the importance of each

Module 6 Further Reading

- Dennis Bager, Ralph Bugg and Geoffrey Whitehead (1993)
International physical distribution and cargo insurance

Module 7

Carriage of Goods by Sea

Objectives

At the end of this unit, the students should be able to:

- Identify and develop a criteria for selecting a suitable shipping carrier
- Describe the different sub forms of sea transport
- Outline factors that enable efficient sea transport

Different sub forms of Sea Transport

- **Passenger cargo liners** – ply on regular routes on regular schedules. They carry cargo and passengers.
- **Cargo carrying ships** – no regular routes or schedules. Route depend on demand and carry variety of cargo.
- **Coastal shipping** – used to transport cargo and people where it is considered more practical and economical to overland
- **Bulk carriers** – vessels designed to carry bulk cargo e.g. oil tankers, grain carriers etc
- **Roll-on-off ferries** – for regular passenger services, private vehicles, loaded vehicles (railway wagons, lorries and trucks over short distances within a country or between countries).

Requirements for Efficient Transportation

- Terminals - harbours, ports, docks with appropriate and adequate equipment to facilitate quick turn-around of vessels.
- Adequate accommodation for warehousing/storage of cargo. Other related services must be also be sufficiently available.
- Regular and efficient transport to and from the port must be provided – rail and road.

Merits and Demerits of Sea Transport

Demerits

- Requires high degree of coordination
- There is less room for mistakes due to cost implications
- It is slow

Merits

- Cheap
- Convey huge volume of cargo
- Preferred for bulky cargo – oversize cargo

Criteria for selecting a suitable shipping carrier

- Characteristics of goods and quantity
- Time factor
- Alternative schedules, modes and routes.
- Costs
- Contractual obligations
- Industrial relations, political and climatic factors
- Limitations of terminals, ports, harbours etc
- Limitations of various transport modes
- Preference of the shipper
- Carrier charges, terms and conditions
- Carrier service quality

Other concerns for a freight forwarder in selecting a carrier

- Nature of the goods i.e. volume, weight, packaging requirements, handling equipment etc.
- Availability of shipping and related services
- Door to door service, its charges and efficiency
- Terms and requirements of the letter of credit
- Cultural and norms barriers to both shipper and consignee
- Containerisation aspects, line terms and conditions

Module 7 Sample Questions

- Describe the various forms of sea transport
- What infrastructure requirements are needed for efficient sea transport?
- Giving examples explain the benefits of sea transport and enumerate the disadvantages
- Briefly explain with appropriate examples where possible, five factors that would influence the choice of a shipping carrier

Module 7 Further Readings

- Alan E. Branch 1995: Dictionary of shipping International Business Trade Terms and Abbreviations – London, Witherby & Co. Ltd.
- Alan E. Branch 1999: Export practice and Management – London, International Thompson Business Press.
- Cambridge International College 2002, Training manual on business Economics & Commerce

Module 8

**Carriage of Goods by other means-
Air,Rail,Road,Inland Water, Pipeline**

Objectives

- Define terms used in air transport
- Identify and apply legal framework governing international transport
- Outline the role of various international organisations involved in air transport
- State merits and demerits of air transport
- Identify documents used in air transport
- Identify the various types of special cargoes and how they are carried by air

Terms used in Air Transport

The follow are references for terms used in air transport

- Tact rule 1.5
- AOG- Air cargo guide glossary, general information

Merits and Demerits of Air Transport

- Speed
- Less insurance cost
- Less documentation required
- Handling and storage cost lower

Air transport is however very expensive.

Terms used in Air transport

A few of these terms include:

- Agent
- Aircraft pallet
- Booking
- Break bulk agent
- Carrier
- Consolidation
- IATA
- ICAO
- ULD
- TACT

Parties in Air Transport

Operators

- Airlines
- Ground handling agents
- Freight Forwarders

Regulators

- International Civil Aviation Organization (ICAO)
- International Air Transport Association (IATA)
- Civil Aviations at country level

Industry Regulation

ICAO

- Founded in 1947 under the umbrella of United Nation Organization (UNO).
- Aims & objectives – Promote development of safe and secure international air transport, address the need of consumers, promote healthy competition etc.

Industry Regulation

IATA

- Voluntary non-political industry association for airlines to facilitate international air transport.

Some of the aims of IATA include:

- To promote safe, regular and economical air transport.
- To provide a platform for carriers in the international transport to collaborate.
- To collaborate with other international organisations concerned with air transport.

IATA Air Cargo Agency

- An IATA cargo agent – a freight forwarder registered by IATA to act on behalf of an appointing airline. These agents have grown to be key customers of the airlines
- IATA has set up a criteria for vetting freight forwarders applying to be cargo agents
- The agents are given stocks of AWB by the appointing airlines
- They are paid a commission by airlines

Services offered by IATA Cargo Agents

- Assist customers with shipping information
- Provide facilities for acceptance of cargo from shippers
- Prepare airline documentation
- Ensure compliance with imports/exports procedures
- Arrange insurance for customers
- Arrange transport, booking and tracking of shipments etc.

Consolidation

- **Consolidator** – freight forwarding agency specializing in air consolidation (groupage)
- Services offered by consolidators include:

For exports - consolidation of cargo, delivery of bulk cargo to airline, loading of cargo in air ULDs, tracking of shipments.

For imports – arrangement for payment of taxes and other charges, processing of documentation, undertaking domestic transfers etc.

International regulations

The following are important for regulation of international air transport:

- The Chicago Convention
- Bilateral Agreements
- The Warsaw Convention
- The IATA General conditions of carriage

Special Cargo

- Types of special cargo
- Dangerous goods
- Live animals
- Valuable cargo
- Perishable cargo
- Wet cargo
- Human remains
- Personal effects
- Outsize of heavy cargo
- Arms, ammunitions and war materials
- Other cargo need needing special loading

Documentation for special cargo

- Air waybill is required for all types of cargo
- Others types of cargo require special document e.g. certificate required for dangerous goods etc.
- Licences are also required in some cases among other documents.

Other Operations

- Labeling
- Proper packaging
- Proper addressing
- Each type of special cargo require special handling

Dangerous Goods

- Dangerous goods are substances that are potentially hazardous during carriage
- They must therefore be declared, identified, packaged, labeled and handled per IATA Dangerous goods regulations
- This is to minimise the likelihood of accidents, loss, etc.

Air Waybill (AWB)

Its important

- To understand cautionary notices on the AWB
- To understand the purpose of the air waybill and how its interpreted

An AWB

- Indicates validity and duration
- Indicates responsibility for completion
- Can be amended
- Has a unique AWB number that can be verified.

Sample Questions

- What advantages does air cargo transport has over other modes.
- Briefly explain the roles played by ICAO and IATA in international air cargo transport.
- Why would a freight forwarder desire to become an IATA agent and what services does the agent offer.
- Why is it important to adhere to IATA regulations relating transport of dangerous cargo .
- An AWB is one of the most important documents in air transport. What are its uses.

Further Readings

- The Air cargo Tariff (TACT)
- TACT rates book
- IATA dangerous goods code
- IATA publications

Carriage of Goods by Road

Background

- Most used mode of overland transport. All almost all products are transport by road at some point.
- Road network must be efficient.
- Quality and quantity of road infrastructure is critical.
- Poor road infrastructure increases the cost of road transport services.
- The road network requires terminal facilities and nodes for safe and quick loading and offloading.
- Adequate docs For loading and unloading

Regulatory and other requirements

Regulatory environment

- Regulations affect such issues as licensing, equipment, weights, dimensions speed limits, taxes, insurance, tariff, dangerous goods etc
- Issues such as wages and training, liability, vehicle and driver safety, maintenance standards and others.

Other requirements

- - Handling machinery and equipment
- -Adequate parking area
- - Warehouses for storage
- Weight bridges.

Advantages of Road Transport

- Door to door service
- Flexibility
- It can take the shortest route
- Exceptional loads can be moved by special transporters
- Competition between road haulers keeps costs to customers down.

Disadvantages of Road Transport

- Diseconomies – low carrying capacity.
- Restriction of travelling, speed, areas, roads etc
- Social responsibility e.g. pollution etc

Types of Road Trucks / Vehicles

- Van- body semi-trailer : Can be heated or refrigerated
- Moving van semi-trailer : Can be used for transporting electronic products.
-
- Platform semi-trailer : Can be equipped with fixed or removable slots and is adaptable to handle lumber logs.
-
- Tank semi-trailer : Pressurized clean bore tank body or compartmented tank body.
- Logistics trailer : This allows for double floors.

Road Transport Documents

- Road consignment note
- Packing list
- Commercial invoice
- Certificate of Origin
- Consular invoice/visa
- Admission temporaire (ATA) Carnet.

Carriage of Goods by Rail

Introduction

In some countries railways were the major form of inland transport ,but most of them have lost their dominant position.

Rail transport is not well developed in this region

Advantages and Challenges of Rail Transport

Advantages

- Speed is greater than by road
- Operating costs are low
- Less pollution

Disadvantages/challenges

- Transport time by rail is often slow, because goods have to be taken to and collected from rail terminals.
- Time tabling imposes some rigidity
- Lack of route flexibility
- High costs of staffing and maintenance

Types of Rail Transport

- Passenger rail transport
- Cargo railway transport
- Combined passenger and cargo railway transport

Rail Transport Documents

- The forwarding note
- The railway receipt
- Consignment note
- Domestic and transit consignment note

Types of the Railway Wagons

- Covered
- Container
- Low open
- Tack wagons
- Passenger coaches/cars
- Special user wagons (coal)
- Livestock
- Flat wagons (cars)- various types
- Motor vehicles carriers (deckers)

Types of Containers used in Rail Transport

- General cargo containers
- Thermal containers
- Tank containers
- Dry (bulk) containers
- Platform containers
- Most of the above containers conform to the standard gauge or wide gauge

Transport of Bulk Cargo by Railway

- Rail transport is more effective on transportation of bulk and distance cargo due to its advantage over road transport in terms of wagon capacity, strong railway system and cost per tonnage per kilometre.

Packaging by Railway Transport

- No special package required for railway transportation, railway systems have special designated wagons for different types of cargo
- It is important to make sure that cargo is not over gauge as there are additional charges for that type of cargo over and above normal charges
- There are also additional charges for overweight cargo.

Inland Waterways

- This mode of transport is not well developed in Eastern Africa Region.
- In lake Victoria and Tanganyika cargo is conveyed in vessels.

Pipeline

- This mode is also not developed in the Region.
- Petroleum products are transport on pipeline from Mombasa to Nairobi to Eldoret.
- There are plans to extend the pipeline to Kampala

Module 9

Multimodal Transport

Objectives

At the end of this unit, the students should be able to:

- Define multimodal transport and the terms commonly used
- Enumerate the infrastructure required to support MT
- Outline merits and demerits of MT
- Enumerate parties involved in MT, their rights and obligations
- Apply the legal framework relevant to MT
- State and apply the various documents used in MT
- Outline challenges hindering development of MT in Africa

Definition

MT is a transport service involving at least two modes for door to door delivery under a single contract between the shipper and the transport service provider and the unit of merchandise remains unchanged throughout transit.

Important features

- Door to door/warehouse to warehouse
- At least two modes used
- Unit of cargo does not change
- A single contract between shipper and transport service provider
- Single transport service provider responsible for performance of the contract

Definition

MT – chain interconnecting several modes through nodes to provide efficient and cost-effective door-to-door service.

The transport service provider outsources the actual conveyance services from other operators or provide himself.

Common terms in MT

- **MT contract** – Commercial agreement procuring performance of an international MT contract.
- **MT document** – Documents evidencing existence of an MT contract
- **MT operator (MTO)** – person contracting with a shipper to provide MT services
- **Carrier** – Person who performs actual carriage

Common terms in MT

- **Taken in charge** – handing over of the goods to the MTO/acceptance of the goods by the MTO
- **Consignor** – Person concluding the MT contacting with the MTO
- **Consignee** – Person entitled to receive the goods from the MTO
- **Delivery** – Handing over of the goods to the consignor or placement at a designated place.
- **Goods** – Any properties handed over to the MTO by the consignor including pallets, containers etc

Requisite infrastructure for MT

Roads – well maintained high quality network for all types of traffic. Harmonised axle load limits etc.

Rail – Wide network of varying gauges, locomotives, wagons, marshaling yards, sidings, exchange yards, loading and unloading platforms and other infrastructure.

Sea transport – Well developed sea transport. Well equipped ports to facilitate mode transfer.

Air transport – well developed air transport for cargo. Properly equipped airports providing for safety and security.

Requisite infrastructure for MT

- Inland container depots – these provide important transfer nodes between road, air, rail, inland waterways, pipelines etc.
- Pipelines – important for liquefied products.
- Inland waterways – Where inland water transport is well developed, it compliments rail, road, and air transport and is relatively cheaper.
- Integration – Most important is to have nodes well equipped to integrate the various modes

Merits of MT

- Reduced cost
- Efficiency
- Increased traffic safety
- Responsibility rest with one operator
- Shipper deals with a single operator
- Less environmental pollution
- Combination of advantages of different modes
- Transfer of technology
- Simplified documentation

Demerits

- Network configuration problems
- High demand for equipment
- Time wastage due to double handling
- Lack of legal framework

Operators in MT

- Transport service providers e.g. rail, road, air etc service providers
- Node operators e.g. airports, ports, inland container depots etc

Key parties in MT

- Governments
- Transport services providers
- Shippers

Services provided by MTO

- Organise/ perform international transport operation
- Take carriers responsibility
- Manage and control stock & warehouses
- Provide regular information to the shipper
- Arrange for distribution and related services e.g. packing, storage etc
- Commercial operations e.g. invoicing etc
- Other logistics services

Legal Regime

- Most countries do not have legal regime to regulate MT especially in Africa
- The UN convention on International Multimodal Transport of goods 1980 is yet to come into force
- Pending the coming into force of the UN Convention, UNCTAD/ICC rules are used though they must apply consistently with national legislations and other related international conventions

UNCTAD/ICC rules on MT documents

The rules deal with among other things:

- Responsibilities of MTO
- Liabilities and limitation of liabilities for MTO
- Loss of rights by MTO to limit liability
- Liability of the consignor
- Notification of loss or damage of the goods
- Time validity of liability
- Application of the rules to action in tort
- Applicability of the rules to MTO servants, agents
- Mandatory law

Documents in MT

Negotiable FIATA Multimodal Transport Bill of Lading

Non Negotiable FIATA Multimodal Transport Bill

Shippers Declaration for the transport of Dangerous Goods

Shippers Intermodal Certification

Negotiable FIATA Multimodal Transport Bill of Lading (FBL)

- A carrier type of document
- Recognised by ICC
- Used by freight forwarders operating as MTOs
- Is also a bill of lading
- Negotiable unless marked non-negotiable
- MTO issuing FBL assumes full responsibility of performing the contract
- A forwarder needs to familiarise with the standard conditions governing FBL

Sample FBL

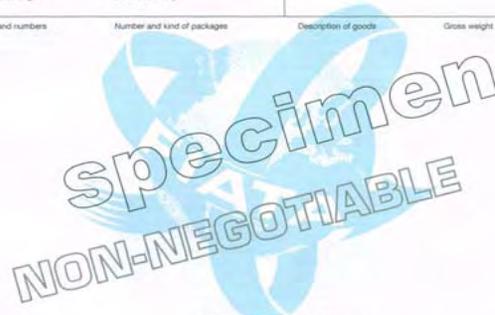
Consignor		FBL NEGOTIABLE FIATA MULTIMODAL TRANSPORT BILL OF LADING <small>issued subject to UNCTAD/ICC Rules for Multimodal Transport Documents (ICC Publication 481).</small>		
Consigned to order of				
Notify address				
Place of receipt				
Ocean vessel	Port of loading			
Port of discharge	Place of delivery			
Marks and numbers	Number and kind of packages	Description of goods	Gross weight	Measurement
_____ according to the declaration of the consignor				
Declaration of interest of the consignor <small>in timely delivery (Clause 6.2.)</small> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>		Declared value for ad valorem rate according to <small>the declaration of the consignor (Clauses 7 and 8).</small> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>		
<small>The goods and instructions are accepted and dealt with subject to the Standard Conditions printed overleaf.</small>				
<small>Taken in charge in apparent good order and condition, unless otherwise noted herein, at the place of receipt for transport and delivery as mentioned above. One of these Multimodal Transport Bills of Lading must be surrendered duly endorsed in exchange for the goods. In Witness whereof the original Multimodal Transport Bills of Lading all of this tenor and date have been signed in the number stated below, one of which being accomplished the others to be void.</small>				
Freight amount		Freight payable at		Place and date of issue
Cargo insurance through the undersigned <input type="checkbox"/> not covered <input type="checkbox"/> Covered according to attached Policy		Number of Original FBL's		Stamp and signature
For delivery of goods please apply to:				

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Non- Negotiable FIATA Multimodal Transport Bill (FWB)

- A carrier type of document (white/blue)
- Recognised by ICC
- Used by freight forwarders operating as MTOs
- Is also a bill of lading
- Non-negotiable
- A forwarder needs to familiarise with the standard conditions governing FWB)

Sample FWB

Consignor		 FWB		NON-NEGOTIABLE FIATA MULTIMODAL TRANSPORT WAYBILL	
Consigned to		<small>issued subject to UNCTAD/ICC Rules for Multimodal Transport Documents (BIC Publication 481)</small>			
Notify address					
Place of receipt					
Vessel	Port of loading				
Port of discharge	Place of delivery				
Marks and numbers	Number and kind of packages	Description of goods	Gross weight	Measurement	
					
according to the declaration of the consignee					
Declaration of interest of the consignee in timely delivery (Clause 7.2.) <input type="checkbox"/> YES <input type="checkbox"/> NO		Transfer of right of control to consignee (Clause 4.) <input type="checkbox"/> YES <input type="checkbox"/> NO		Declared value for ad valorem rate according to the declaration of the consignee (Clauses 8. and 9.) <input type="text"/>	
The goods and instructions are accepted and dealt with subject to the Standard Conditions printed overleaf. Taken in charge in apparent good order and condition, unless otherwise noted herein, at the place of receipt for transport and delivery to the consignee as mentioned above.					
Freight amount	Freight payable at	Place and date of issue			
Cargo insurance through the undersigned <input type="checkbox"/> Not covered <input type="checkbox"/> Covered according to attached Policy		Stamp and signature			
For delivery of goods please apply to:					

Shippers Declaration for the transport of Dangerous Goods (FIATA SDT)

- Not exclusive for use by MTO
- Helps to reveal full details of dangerous cargo handed to MTO
- MTO uses this information in dealing with the goods to avoid any loss, damage, accident etc

Sample FIATA SDT

Shipper (Name & Address) / Chargeur (Nom & Adresse)	<div style="text-align: center;">  <p>FIATA SDT</p> <p>No. <input type="text"/></p> <p>SHIPPERS DECLARATION FOR THE TRANSPORT OF DANGEROUS GOODS (approved by FIATA)</p> </div>
Consignee (Name & Address) / Destinataire (Nom & Adresse)	Forwarder / Transitaire Ref. no.
<p>In accordance with the European Agreement concerning the international carriage of Dangerous Goods by Road (ADR) with Annexes A+B of 30.9.1967, or the International Regulations concerning the Carriage of Dangerous Goods by Rail (RID) as Annex I of the International Convention concerning the Carriage of Goods by Rail (CIM) of 1.7.1977, or in accordance with Chapter 10 - Carriage of Dangerous Goods - of the International Convention for the Safety of Life at Sea, 1974, supplemented by the provision of the IMO International Maritime Dangerous Goods (IMDG) Code, 1965 as amended, or national official regulations when applicable giving the precise listing of relevant ADR/RID Class, and/or IMDG/IMO Class, and/or Marginal Reference No., the undersigned, as principal of the forwarder permits to him together with the order of shipment of Dangerous Goods the following information:</p>	<p>Conformément à l'Accord européen relatif au transport international des marchandises dangereuses par route (ADR) et ses Annexes A+B du 30.9.1967 ou au Règlement international concernant le transport des marchandises dangereuses par chemin de fer (RID) et à l'Annexe I de la Convention internationale concernant le transport des marchandises dangereuses par chemin de fer (CIM) du 1.7.1977, ou conformément au Chapitre 10 - Transport de marchandises dangereuses - de la Convention internationale pour la sécurité des vies en mer, 1974, complété par les dispositions du Code maritime international des marchandises dangereuses (IMDG) 1965, amendé, ou l'OMI ou aux réglementations nationales officielles d'application donnant la liste précise des classifications ADR/RID et/ou IMDG/OMI applicables, et/ou le No. de référence marginal, le soussigné, commandant du transitaire, lui remet en même temps que l'ordre d'expédition de marchandises dangereuses les renseignements suivants:</p>
<p>Marks & Numbers, Number & Kind of Packages, Correct Technical Name of Substances, indicate ADR/RID Class, IMDG/IMO Class, UN-No., Flashpoint (n° C), Marques et Numéros, Nombre et Nature des colis, dénomination technique appropriée des substances, Indiquer la Classe ADR/RID, Classe IMDG/IMO, n° d'ordre UN, Point Éclair (n° C).</p>	<p>Gross Weight (kg) / Poids brut (kg) (when required) / Quantité nette (si y a lieu)</p>
<p>Characteristics:</p> <p>Special information is required for (a) dangerous goods in limited quantities, and (b) radioactive substances (class 7) in certain circumstances, (c) a weathering certificate, or (d) a Container/Trailer packing certificate is required.</p> <p>ADR/RID and/or IMDG/IMO Declaration</p> <p>The undersigned declares that goods to be shipped are authorized for transport by road according to ADR or by rail according to RID and/or transport by sea and that their nature, conditions, packing and labelling are in accordance with ADR/RID and/or IMDG/IMO prescriptions.</p> <p>If several dangerous substances are packed together in a collective package or in a single container, it is furthermore declared that the mixed packing is not prohibited (ADR/RID).</p> <p>Instructions in case of accidents <input type="checkbox"/> are joined <input type="checkbox"/> will be given The packages <input type="checkbox"/> have been labelled <input type="checkbox"/> are not labelled</p> <p>Special remarks Remarques particulières</p>	<p>Caractéristiques:</p> <p>Des renseignements supplémentaires sont nécessaires pour (a) des marchandises dangereuses en quantités limitées et (b) les substances radioactives (classe 7). Dans certains cas, (c) un certificat d'emballage, ou (d) un certificat d'emballage pour conteneur/remorque est requis.</p> <p>Déclaration ADR/RID et/ou IMDG/OMI</p> <p>Le soussigné déclare que les marchandises à expédier sont admises au transport par route suivant ADR ou par fer suivant le RID et/ou par mer et que les conditions de leur nature, l'emballage et l'étiquetage sont en concordance avec les prescriptions de ADR/RID et/ou IMDG/OMI.</p> <p>Si plusieurs marchandises dangereuses sont emballées ensemble dans un colis collectif, ou dans un même conteneur, il est déclaré également que cela n'est pas prohibé (ADR/RID).</p> <p>Des consignes en prévision d'accidents <input type="checkbox"/> sont jointes <input type="checkbox"/> seront évitées Les colis <input type="checkbox"/> ont été étiquetés <input type="checkbox"/> n'ont pas été étiquetés</p> <p>Place and date of issue Lieu et date d'émission</p> <p>Shippers signature and stamp Sceau et signature du chargeur</p>

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Incoterms

Incoterms have been developed as a means of standardising international practice. They help to:

- Simplify foreign transactions
- Avoid misunderstandings between buyers and sellers in international trade.

Contracting parties must however agree on the terms to be used.

The following table summarises the most commonly used incoterms indicating distribution of costs and liabilities between buyer and seller

MT in Developing Countries

MT is not well developed in developing mainly because;

- Poor/inadequate regulatory environment
- Complicated procedures
- Poor infrastructure
- Lack of human capital
- Poorly developed transport sectors
- Low use of the incoterms

Challenges of MT in Africa

- High transport cost
- Poor infrastructure – delays
- Numerous roadblocks
- Cumbersome customs procedures
- Insecurity
- Low utilisation of E-Commerce

Module 9 Sample Questions

- Define MT and other terms commonly used in MT giving examples where possible
- Differentiate MT from other modes of transport
- Why MT services and not other modes of transport
- State and explain the legal framework supporting MT
- Name two documents used in MT and explain their use
- MT is not developed in Africa especially in Eastern Africa- Give reasons why and suggest possible solutions

Module 9 Further Readings

- Alan E. Branch, 1997 Elements of shipping, Stanley Thornes
- Alan E. Branch, 3rd Edition (1994 Export Practice and Management, ITP
- Economic and Social Commission for Asia and Pacific-manual on freight forwarding, UN 1910
- Freight professionals (2000), Logistics Approach for Forwarders, BIFA

Module 10

Freight Rates

Objectives

By the end of the module the students should be able to:

- Briefly describe the theory of freight rates
- Outline the constituents of freight rates
- Outline factors influencing the formulation of freight rates for different transport modes
- Calculate freight rates under different transport modes

i) The Theory of Freight Rates

ii) Constituents of Freight Rates

iii) Factors influencing the formulation of Freight Rates

iv) Air Freight Rates and their Computation

- Charges
- Canal/Inland Waterways
- Transportation
- Internal Road Haulage Freight Rates
- Maritime Container Rates
- Sea Freight Rates

Calculation of Freight Rates

Chargeable weight/volume ratios for each mode should be assumed

- Air 6 CBM = 1000kgs
- Sea 1 CBM = 1000kgs
- Road 3 CBM = 1000 kgs

Sample Questions

- What are freight rates composed of ?
- What factors influence the formulation of freight rates
- Outline the key issues in the theory of freight rates
- Illustrate the formulas used in computation of freight rates under different transport modes

Further Readings

- Alan E.Branch 1999 Export Practice and Management-
International Thomson Publishing
- Alan E.Branch 2000 Shipping and Air Freight
Documentation for Importers and Exporters and
Associated Terms-Witherby

EAC CU 008

PORT OPERATIONS

Course Description

- It covers areas of relevance to the student including marine operations, cargo operations which includes general, bulk and containerized cargoes
- The course offers the student an introductory outlook on ports, their functions and their activities within the port environment.

Course Objectives

At the end of the course units the Trainees should be able to:

- a) Outline the evolution of ports
- b) Appreciate general cargo operations
- c) Appreciate bulk cargo operations
- d) Appreciate container operations in a port
- e) Appreciate the importance of effective marine operations
- f) Describe the derivation of cargo tariffs

1.0 Introduction to Port and Port Operations

Specific objectives

- a) Explain the meaning of ports
- b) State and explain different types of ports

i. **Meaning and evolution of ports**

- A port is an interface that facilitates change of mode of transport either from overland transport to sea transport incase of exports and vice versa incase of imports
- Examples are Ports of Mombasa and Dar es. Salaam in East Africa
- Airports facilitate change of mode of transport from overland transport to air transport and vice versa

ii. Classification of ports

Ports are classified according to the following:

- a) Generation
- b) Ownership
- c) Services rendered
- d) Physical location

a) **Classification according to Generations**

- **First Generation Ports-** These are ports that were established in the early sixties to provide shore handling and stevedoring services which include loading and unloading of ships , storage, receipt / delivery of cargo ,naval repairs etc.
- They were mainly administered by local authorities and enjoyed monopolistic positions.

Cont.

- **Second generation Ports-** These ports emerged in the sixties and early seventies to provide services other than Stevedoring and shore handling such as transport, industrial and trade services which include manufacturing, packaging and labeling of products
- Have a global outlook of port activities and policy, regulation and expansion are subject to scrutiny
- They are sometimes called “industrial ports”

Cont

- **Third generation ports-** Emerged in the eighties in response to growth in containerized cargo
- Meant to expedite intermodal transport to meet growing international trade requirement

Cont.

- **The Forth Generation Ports-** These are ports that are currently emerging to handle mega container carrier vessels that carry over 12,000 TEUs
- Example is the port of Tanjung Pelepas in malaysia

b) Classification of ports based on Ownership

- **State owned-** These are common user ports established under an act of parliament
- The government consider them a national resource and has direct input into the management of human and financial resources
- It appoints the Board of Directors to run the facility on its behalf.
- Examples are found in East Africa (Mombasa, Dar es Salaam

Cont.

- **Comprehensive Ports-** Are owned by state but the port Authority is vested with all powers to run the facility
- Operate on a commercial basis with no government interference
- Example is the port of Singapore

Cont.

- **Municipal owned Ports-** They are owned and managed by Municipalities who undertake maintenance and constructions
- Example is the port of Rotterdam

Cont

- **Company ports-** Are owned and operated by private companies though in some cases the government could own some shares
- They specialize in specific commodities in most cases minerals and are constructed close to the Source.
- Some shipping lines and Railway companies own this type of port companies
- Are characterized by efficient management and flexible procedures
- Are common in Europe and the USA

Cont.

- **Autonomous ports**- Operated by autonomous bodies set up by the state who appoint the governing body and Chief Executive officer
- Example is the port of Liverpool

c) Classification of ports based on Services Rendered

- **Operating Ports-** Are run by an authority established by the government
- The port out sources most services and retains only most of the cargo handling services
- Has little government control
- Found in most American ports. Singapore is also adopting this format

Cont.

- **Tool ports-** Owned by municipalities which provides structures and superstructures.
- They lease the structures and machinery to port users.
- Example is Le Havre in France

Cont.

- **Free ports-** these ports operate in an environment free of taxes
- facilities include warehouses, industrial plants, banking and other support facilities
- Traders import and export goods duty free
- Example is the Dubai Free Port

Cont

- **Land Lord ports-** The port owners provide the infrastructure such as quay walls, cargo handling equipment which are leased to different stevedoring companies
- They are currently under consideration in East Africa

d) Classification of ports based on Physical Location

- **Sea ports-** Located adjacent to the sea to facilitate transfer of cargo from land to sea and vice versa.

Cont.

- **Dry ports-** They are cargo centers located inland and are sometimes regarded as extensions of seaports
- Are meant to bring service closer to the users and to decongest the seaports
- They are either state owned or private owned
- Examples are those found in the inland of East Africa

Cont.

- **Airports-** These are mainly for urgent deliveries and passengers.

iii) The merits and demerits of each type of port

State Owned Ports

Merits

- Enjoy government financial commitments
- Profits are equitably distributed across the country
- Have capacity for expansion

Demerits

- Prone to political interference
- Lots of wastage of resources
- Poor delivery of service

Comprehensive ports

Merits

- Quick decision making
- Efficient delivery of service

Demerits

- May take long to establish and develop
- Very costly to establish as it requires very heavy investment

Municipal Ports

Merits

- Better adaptation to specific and peculiar environments
- Enjoy support of local residents
- Efficient in operations and decision making

Demerits

- Require huge financial investment
- Subject to local political interference
- Limitations of land for expansion

Company ports

Merits

- Efficient due to specialization
- Very flexible in adaptation of local environment

Demerits

- Stakeholders may not reinvest their dividends leading to lack of investment capital

Autonomous ports

Merits

- Financial stability
- Clear financial planning
- Workers are more committed to their work
- Elements of subsidy exist

Demerits

- May have exaggerated expenditure
- Danger of having a large number of board members which compromises efficiency

iv) Function of ports

- a) Trade facilitation
- a) Employment creation
- b) Revenue collection
- c) social responsibility
- d) Immigration control
- e) Contain international crime
- f) Promote tourism

2) General cargo operations

Objectives

At the end of the lesson, the trainees should be able to:

- Explain how different types of cargoes are stored in ports
- Outline various types of cargoes
- Explain specific handling operations involved in stevedoring of general cargo
- Describe methods of handling bulk cargo

What is General Cargo Operations

- It refers to activities involved in handling unitized and heterogeneous cargoes.
- A shipload contains different types of cargoes in terms of weight, volumes, packages which require different types of handling equipment, techniques and gears

i) Nature of general cargo

General cargo can be classified based on:

- a) Perishability
- a) Physical and chemical characteristics

a) Classification based on perishability

Cargo can be classified into;

- **Perishable cargoes-** Constitutes those cargo that degenerate in a short time and require specialized storage e.g. fish, flowers, vegetables ,vaccines.
- **Non-perishable cargo-** they can stay for long without going bad e.g. hardware, timber, automobiles

b) Physical and chemical characteristics

Classification is based characterized into:

- Clean cargoes
- Dirty cargoes
- Neutral cargoes
- Heavy lifts

ii) Storage of cargo in port

- Port serves as temporary storage of cargo in transit areas awaiting shipment aboard a nominated vessel or aircraft
- Ports are transit points and therefore overstay of cargo causes congestion and inefficient cargo operations
- Export cargo is normally stacked near quays while imports are stacked further near the exit gates.
- Stacking must consider compatibility to avoid dirty cargo damaging clean cargo
- Dangerous cargo must be segregated as per recommendations of IMDG code

iii) Stevedoring

- Stevedoring is the function of loading and discharging cargo from ship.
- It involves four interlinked activities called “hook cycle”
- The hook cycle is divided into:
 - a) The Loading Hook Cycle
 - b) The Discharge Hook Cycle

a) The Loading Hook

The loading hook cycle involves four stages or activities

1. Hooking onshore
 2. Cargo consolidation ready for loading
 3. Transfer of cargo from quayside into ship
 4. Hook return to the shore
- The above four stages is measured in time constitute hook cycle.
 - A shorter hook cycle will achieve a higher tonnage per hour
 - Care must be taken not to exceed the safe working load (SWL)

b) The discharge hook cycle

The process is a direct reversal of the loading hook cycle:

1. Breaking the stack and transfer to the hatch-square
 2. Consolidation of cargo in the hatch square and hooking onboard
 3. Transfer of cargo from ship to shore
 4. Return of the hook back onboard
- Care must always be taken in the above processes to avoid damages on cargo and injuries to crew

3) Bulk Cargo Operations

Objectives

- At the end of the lesson, the trainees should be able to:
 - i. Define what is meant by bulk cargoes
 - ii. Understand storage of bulk cargo in ships
 - iii. Explain methods used in loading and unloading of bulk cargo
 - iv. Explain the derivation of port charges relating to bulk cargo

What are bulk cargoes

- These are cargoes that are transported en masse, in large volumes in specially constructed ships.

The cargo may be in the following modes:

- Dry
- Liquid or
- Gas

i) Types of bulk cargoes

Bulk cargo can be classified into:

- **Liquid bulk cargo-** includes crude oil, refined oil products, liquefied petroleum gases and cooking oil transported in bulk ships and oil tankers
- Discharged in specialized oil terminals e.g. Kipevu oil terminal (KOT) for crude oil, and Shimanzi oil terminal (SOT) for refined oil products in Mombasa port
- Most are of dangerous nature and require specialized handling

Cont.

- **Dry bulk cargo-** include edible foods such as maize, beans, wheat; raw materials as clinker, iron ore bauxite and soda ash
- It also includes industrial and agricultural products as fertilizers, cement etc
- Conveyance of such cargo is done using specially built ship with very wide hatch opening and sophisticated tank arrangements to ensure stability

ii) Methods of handling bulk cargo

- Different methods are used to handle different types of bulk cargo.
- Some dry bulk cargo handling facilities available at the port of include Bamburi cement, Magadi soda, Grain handling (Grain bulk Ltd)

Cont.

Bulk cargo can be handled using different methods namely:

- Grabs
- Magnetic grabs
- Conveyor belt
- Evacuators

4) Marine operations and Tariff

Objective

At the end of the lesson the trainee should be able to:

- i. Explain the importance of efficient
- ii. Pilotage and mooring services
- iii. Explain charges applicable in marine operations
- iv. Explain the services provided by the port

The importance of an efficient marine services

- Marine operations collectively refers to the services rendered to the ships calling at a port.
- They ensure that the ships are guided safely into and out of the port.
- The services are provided under a gazetted tariff.

The marine services available include:

i. Pilotage:

- Due to the unique characteristics of every port, masters of visiting ships are not allowed to approach the port unguided.
- Local pilots are provided to guide the ships into and out of the port. This is termed as Pilotage
- Small “pilot boats” are deployed. Pilotage charge is charged for each vessel

Cont.

ii. Mooring services:

- mooring refers to the process of securing and un-securing of ships along quays, buoys, or anchorage
- Mooring gangs, mooring boats and tug boats are used for this purpose
- Ships are secured using wire or fiber ropes which are carried onboard a ship
- Tonnage based charge is levied

Cont.

iii. Tug services:

- Tugs are small vessels used to assist the pilot by towing, pulling or pushing ships into position during maneuvering (mooring operations) to come alongside or depart the quay
- The charge is distinct from other charges as it is computed using vessels tonnage, number of tugs and the number of times the service has been provided

Cont.

iv. Light dues:

- This is a charge levied for dredging port approach for safe access.
- Channels are demarcated using buoys with lights for use at night. Other lights are fixed on light houses
- The charge is charged per ton

Cont.

v. **Port and harbor dues:**

- This is a charge that is charged for ships calling to any port
- Does not relate to a specific function and is tonnage based

vi. **Dockage:**

- These are charges paid by the ship for the benefit gained for lying alongside a berth
- It is calculated using the length of the vessel and the time it takes to stay alongside the berth

Cont.

vii. Buoyage:

- This charge accrues when a ship is moored at buoys.

vii. Anchorage:

- These are charges paid for ships anchoring at the port

viii. Laying up of vessels:

- Refers to those vessels that stay for long periods of time for reasons other than cargo handling
- Calculated using length of time and ship length

Cont.

ix. Private mooring buoys and jetties:

- Ports charge private owners for privately owned mooring buoys and jetties

xi. Pollution control:

- A charge for the protection of the environment

xii. Bunkering:

- Refers to supply of fuel to visiting ships

Cont.

xiii. Salvage operations:

- This refers to recovering a ship that has been incapacitated
- It also means recovery of cargo which has been lost overboard

xiv. Provision of fresh water

- Supplied through pipelines which run alongside the quayside

xv. Port securing

- There is need for port to look into the issue of security due to terrorist threats
- Also as per the requirement of International Ship and port security (ISPS Code)

xvii. Container Handling Equipment

- Ship to shore gantries (SSGs)
- Rubber tyred gantries (RTGs)
- Rail mounted gantries (RMGs)
- Top loaders and reach stackers
- Empty Container Handlers
- Forklift Trucks
- Terminal Tractors

Cont.

Xviii. Port performance:

- This is a measure of efficiency of the port in terms of loading and unloading of cargo
- Port performance is measured per number of tons handled per day for general cargo and the number of moves or containers handled for containerized cargo.

Cont.

xix. Vessel delay surcharge:

- This is a punitive charge imposed by the shipping lines due to delays the ships encounter at inefficient ports.

Sample Questions

1. What is marine operations and identify the various charges levied in the operation
2. why is Pilotage considered an essential service provided by the port?
3. Define and explain what tugs and mooring boats are and their usage in marine operations
4. Explain the meaning of port performance
5. What is vessel delay surcharge and when is it applied

Container Operations

Objective:

At the end of this lesson, the trainee should be able to:

- i. Define what a container is
- ii. Briefly explain the evolution of containerization
- iii. Classify containers
- iv. Explain the types and importance of container markings and numbering
- v. Describe the different types of container carrying ships

cont

- i. Explain briefly the process of container ship operations
- ii. Explain container yard operations
- iii. Explain the Container Freight Station operation
- iv. Explain the role of Inland Container Depots

Meaning and historical background of containerization

- A container is a box used to hold and protect cargo carried within. They are strong enough for repeated use and are designed to be stackable.
- Started way back after the world war II when the demand for reconstruction materials became a reality.
- 60-80% of voyage time by conventional general cargo vessels was spent on loading or unloading of cargo. This was very costly to the ship owners
- The need for unitized cargo was therefore apparent hence containerization

ii) Types and classification of containers

Containers can be classified based on material of construction, size and use

a) **Classification based on material of construction**

- Steel containers
- Aluminum containers
- GRP containers

b) **Classification based on size**

- Standard
- High cube
- Super high cube

Cont.

c) Classification based on use

- Dry freight or general cargo containers
- Ventilated containers
- Thermal containers
- Reefer containers
- Insulated containers
- Refrigerated containers with expendable refrigerant
- Mechanically refrigerated containers
- Heated containers
- Refrigerated and heated container

Cont.

- Tank containers
- Dry bulk containers
- Open top container
- Platform based container (open sided)
- Special cargo containers

iv. Container Numbering and Markings

- They are used for correct and precise identification.
- Numbering and markings are used for ease in tracking and tracing movements of containers worldwide. some markings are ISO mandatory
- By 2003 there were 20 million containers with an annual growth of 250,000 units

a) Container identification marks

- It consists of three elements. Example for container number MSCU 145227-2
- MSCU is the owners code
- 145227 is the serial number of the particular container
- -2 is the check digit and is ISO mandatory
- The country, size and type mark shows the container, country of origin, size and type of container
- Example **US2200**, means 20ft container(**22**), general purpose (**00**) basic type from USA (**US**)

b) Container Operational marks

- Indicate container dimensions and capacity
- The markings include:
 - Maximum gross weight (MGW) – ISO mandatory
 - Tare weight (TW) –ISO mandatory
 - Maximum payload
 - Cubic capacity

c) Other marks sometimes displayed include:

- **The CSC plate-** contains information on safety standards and date of manufacture
- **The TIR-** often fixed at the door to show approval to be transported through international borders

v) Yard arrangement and operation

Refers to the manner in which containers are stacked

- Yard arrangement must Conform to;
- status (import or export)
- transport means e.g. rail or road
- Nature of cargo as dry, wet or dangerous
- Disposition of equipment

vi. Documents used in container operation

There are several documents used in container operations.
Key among them include:

- Way bills/ bill of lading (BIL)
- Cargo manifest
- Delivery order
- Release order
- Customs declaration document duly passed by terminating customs Authorities
- Letters of credit
- Container interchange and inspection report
- Container guarantee form
- Container demurrage

These documents are produced on basis of international commercial terms referred as **INCOTERMS**

vii. Container security

- Logistics chains are vulnerable to terrorist attacks due to the large number of users and relative accessibility.
- Containers have been used to ferry weapons
- Forwarders should endeavor to provide personnel to be present during stuffing and un stuffing of containers.
- Increase vigilance and provide effective tracking of container movements

5) Inland Container Depot

- They are situated near major cargo consuming areas so as to minimize transport costs
- Must be connected to an efficient road and rail network
- Requires a vast flat land for open storage yards and shed building for stripped cargo and also offices for customs purposes
- Help to decongest ports through facilitation of quick clearance
- Encourage growth of subsidy industries as clearing and forwarding, transport, financial and insurance services

They are mostly extension of sea ports

Sample Questions

- i. What are ICDs and what services do they offer cargo owners?
- ii. What factors are taken into consideration in choosing a site for ICD
- iii. Explain how landlocked countries can benefit from establishing ICDs in their countries

6) The Port Tariff

Objectives

At the end of the lesson the trainee should be able to:

- Explain the charges appearing on the port invoice
- Tabulate and calculate the charges on the invoice

Meaning of the port tariff and charges:

- These are the total charges paid at the port by the cargo owner for services rendered in respect to the cargo.
- Normally based on unit tonnage, volume or value related (Advolarem), or related to the Nature of cargo

Cont.

The charges levied for services rendered include:

- i. Lashing and unlashng
- ii. Stevedoring
- iii. Shore handling
- iv. Storage
- v. Dangerous cargo surcharge
- vi. Heavy lift and outsize cargo surcharge
- vii. Transfer charges
- viii. Security
- ix. Customs warehouse rent

Sample Questions

- i. What is port tariff and explain why the port charges for handling service?
- ii. What are some of the charges levied by the port for shore handling services?
- iii. Explain how the storage charges apply to cargo in the port
- iv. What is customs warehouse rent

Further Readings

- i. Patrick M. Alderson : Sea Transport Operations and Economic practices
- ii. Allan E. Branch(1989):Elements of Shipping
- iii. Allan E. Branch(1986): Elements of Port operations and management
- iv. William V. Packard :Shipping