

MT1002 – Introduction to Maritime Industry

1a.

- Freight market: A market where sea transport services are traded
 - Demand for and supply of seaborne trade
 - Demand for containers or vessels from shippers to transport commodity
 - If there is a high demand for containers/vessels that exceeds the quantity available, it will drive the freight rate higher and higher
 - Vice versa; if there is a low demand for containers/vessels which is way below the quantity available, it will drive freight rate lower and lower
 - Operational vessel fleet – Supply of containers or vessels from shipowners/ shipping companies
 - To meet the demand for containers or vessels from shippers to transport commodity
 - If there is a low quantity of containers/vessels that cannot meet the high demand, it will drive the freight rate higher and higher
 - Vice versa; if there is a high quantity of containers/vessels that way exceeds the demand for them, it will drive freight rate lower and lower.
 - Bunker Price
 - The higher the bunker price, the higher the operational cost of the vessel. This would drive the freight rate charges higher. Vice versa, the lower the bunker price, the lower the operational cost of the vessel. This would drive the freight rate charges lower – assuming all factors are constant (ie. Demand v supply)
 - Shipbroker is the middle man to settle the trade
 - The shipbroker influences the freight rate charged between two parties

1b.

- Time charter – the rate charged for hiring of the vessel in advance of the actual voyage date (ie. A year in advance)
- Spot charter – the rate charged for hiring of the vessel “on the spot”. (ie. Weeks/days before the actual voyage).
 - The main purpose why shipowners will focus on both time charter and spot charter is to allow them to have the sense of security of chartering with Time charter, since they would know the amount of revenue they would be getting in advance. However, shipowners will leave a few vessels for spot market to capitalize any sudden increase of the rate for hire charter to further increase their overall average revenue.

1c. Any five:

- Iron Ore
- Grains
- Coal
- LPG/LNG
- Bauxite
- Phosphate
- Sugar
- Rice

2a. Perils of the Seas: Broadly speaking, anything that happens to a ship in her Voyage by immediate Act of God without human intervention. Refers to fortuitous accidents or casualties which are not attributable to human free will or desire and does not include natural and ordinary actions of winds and sea waves.

2b. MPA's roles:

- APPROVING BUNKER SUPPLIERS
- LICENSING BUNKER SURVEYORS
- **SINGAPORE STANDARD CODE OF PRACTICE FOR BUNKERING (SS600)**
 - Singapore Standard Code of Practice for Bunkering
 - Covers pre-delivery, actual delivery and post-delivery checks and documentation
 - It sets out the best practice for documentation and equipment requirements
 - Verification of procedures during a bunkering operation
 - Pre-delivery, actual delivery and post-delivery checks and documentation
 - Minimise bunkering disputes
 - Must be complied when bunkering within Singapore waters
- **SINGAPORE STANDARD SPECIFICATION FOR QUALITY MANAGEMENT FOR BUNKER SUPPLY CHAIN (SS524)**
 - Singapore Standard for Quality Management for Bunker Supply Chain (QMBS)
 - National quality management standard for Singapore bunkering industry
 - Aims to establish an unbroken chain of control over QUALITY
 - A Requirement for accreditation of bunker suppliers.
- **MASS FLOW METERS**
 - MANDATORY to use MPA-approved MFM system for all Marine Fuel Oil (MFO) bunker delivery in the Port of Singapore.
 - Delivered quantity of MFO stated in the BDN (Bunker Delivery Note) shall be based on the bunker tanker's MFM system as witnessed by the cargo officer, the chief engineer and bunker surveyor (if engaged).

2c.

- 1. Technical – Repairs and Maintenance, Vessel General Upkeeping
 - MAINTAINING THE SHIP'S CONDITION:
 - HULL
 - MACHINERY
 - **PLANNED MAINTENANCE SYSTEM (PMS)**
 - ❖ REGULAR INSPECTIONS (E.G. TANKS, HOLDS, PIPES)
 - ❖ REGULAR SERVICING (LUBRICATION, REPLACEMENT OF PARTS)
 - ❖ OVERHAULING (OPENING UP)
 - ❖ PLANNED MAINTENANCE vs CONDITION MONITORING
 - TRADING CERTIFICATES ARE VALID
 - PREVENTIVE (PMS)
 - BREAKDOWN
 - REGULAR INSPECTIONS/MONITORING/TESTS
 - SERVICING/OVERHAUL/TROUBLESHOOTING
 - REPAIR/REPLACEMENT
- 2. Crewing - Resourcing, Scheduling and Training
 - MEETING OWNER'S REQUIREMENTS
 - MEETING STATUTORY REQUIREMENTS (ISM CODE/SOLAS, MLC, ILO)
 - ENSURING ADEQUATE SUPPLIES (FOOD, CONSUMABLES, SPARES)
 - TRAINING AS PER STCW
 - WELFARE AND TRAINING
 - **TRAINING**
 - FORMAL TRAINING MOSTLY IN SCHOOLS (E.G. SINGAPORE MARITIME ACADEMY)
 - SPECIALISED TRAINING TO MEET MANAGER'S OR SHIP'S REQUIREMENTS ARRANGED BY SHIP MANAGER
 - UPGRADING TRAINING (FORMAL) ALSO PROVIDED IN SCHOOLS
 - UPGRADING TRAINING (MANAGER'S/SHIP'S REQUIREMENTS) PROVIDED BY SHIP MANAGER
- 3. Financial – Budgetary and Cost Control.
 - Budget and cost control
 - Support all teams by prompt accounting and payments
 - Maintains accurate accounts/data for different departments to plan
 - Cost, P&L forecasts
 - Cash management
- 4. Procurement – Resourcing, Logistics, Inventory and Stock Control.
 - Logistics/Sourcing and timely delivery of spares and stores
 - Budget and cost control
 - Inventory/stock management
 - Ensure quality spares parts
 - Supply Chain management (vendors, materials)

- 5. Quality and Safety – Compliance to Regulations, Audits and inspections
 - Ensure Fleet total compliance to regulations
 - Maintain and implement Company's SMS (QHSE)
 - Investigations into incidents
 - Follow up Preventive and corrective actions
 - Monitor defects and deficiencies with the necessary Corrective actions
 - Ship inspections, vetting and audits
 - Crew Training onboard and ashore
 - Monitor Officers performance (KPI , reward etc)
 - Determine and verify Officers and crew competency
 - Data keeping for evaluation and verification
 - Risk assessment of key operations

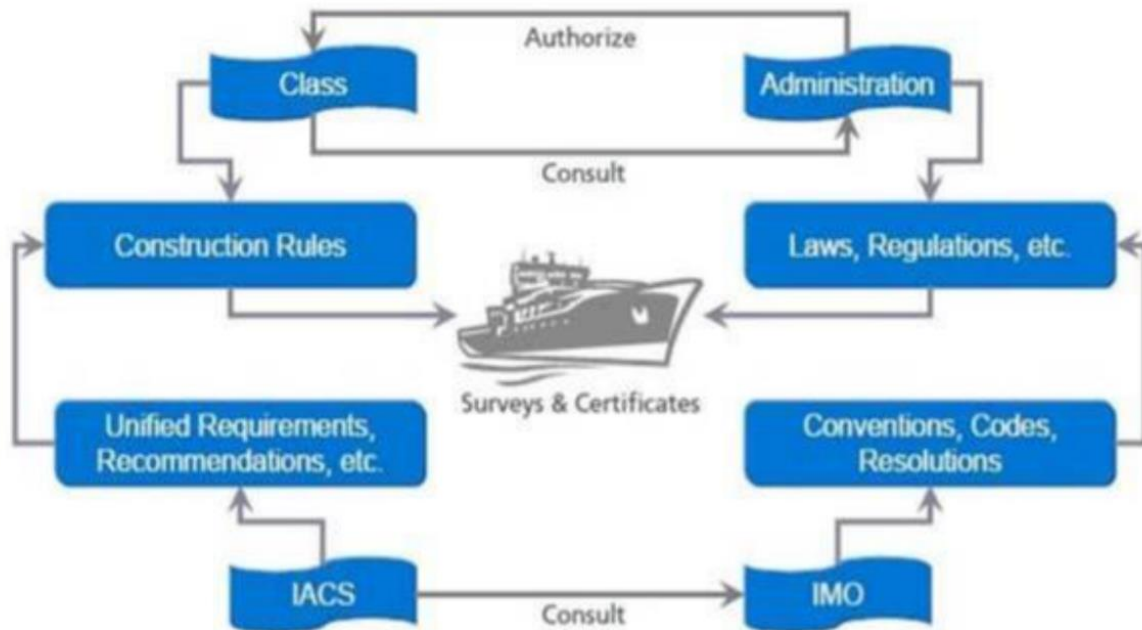
3a. Factors that impacts Safe Navigation:

- Weather - Fog, wind, swells, currents
- Human factor – competency, fatigue
- Equipment - maintenance, calibration
- Obstructions – icebergs, wrecks
- Depth of water – sand bars

3b.

- Growths:
 - Fares are cheaper and affordable compared to Air Tickets
 - Specialty cruises are on the rise at affordable costs
 - Addition of new ports, ports of call, itineraries to attract more passengers
 - Growing sentiment among non-cruise vacationers that cruise is a better option for vacation
- Challenges:
 - Margins are low for the companies as the provision of luxury increases
 - Market penetration is low. Most of the passengers are not first timers.
 - Eliminating the fear of lack of safety among the cruisers.
 - Compliance to heavy rules and regulations of the US Fed

3c.



- International Association of Classification Society (IACS) consults IMO on certain improvement to the industry which would be brought up in conventions, turned into codes or resolutions. If passed, these would turn into Laws or regulations.
- At the same time, IACS would impose their own unified requirements and recommendations; if passed, would become their own construction rules.
- Both of these would work hand in hand to improve the surveys and certificates in the industry.
- Draw diagram out and explain the diagram.

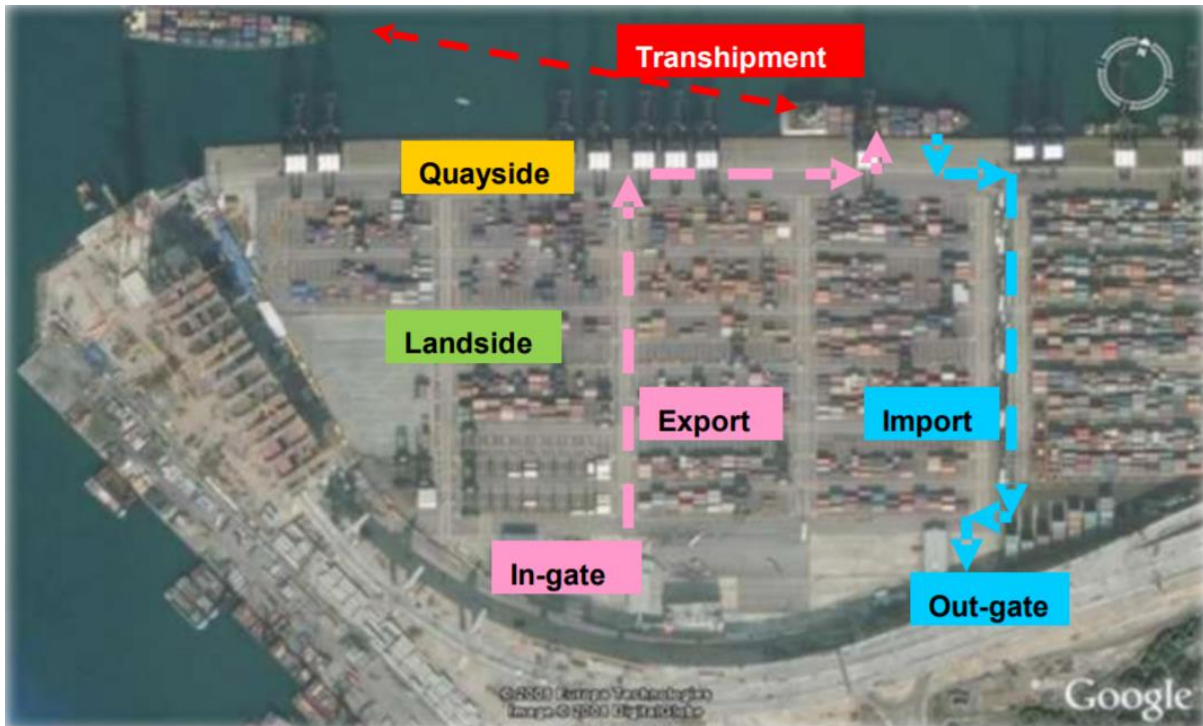
4a. Role of Port Operating in Maritime Logistics:

- 'Distribution Center'
 - Transit cargoes from shore to land or vice versa By different intermodal systems, e.g. rail, road, inland waterway, etc.
- 'Depot'
 - Store cargoes which time, i.e. dwell time will be transferred within a certain period of time ie. Dwell time
 - Dwell Time: A free storage period in the terminal before charge is incurred, usually in liner shipping
- 'Warehouse'
 - Provided value-added services, e.g. repacking, labeling, etc.
 - Port may equip with warehouse or freight station, e.g. Container Freight Station (CFS) for shippers and consignees to consolidate cargoes

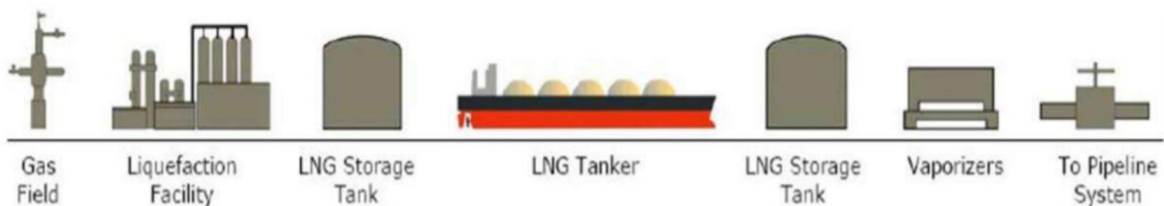
4b. Different operation statuses:

- Transhipment
- Export
- Import

Diagram: - best to use different colours to illustrate



5a.



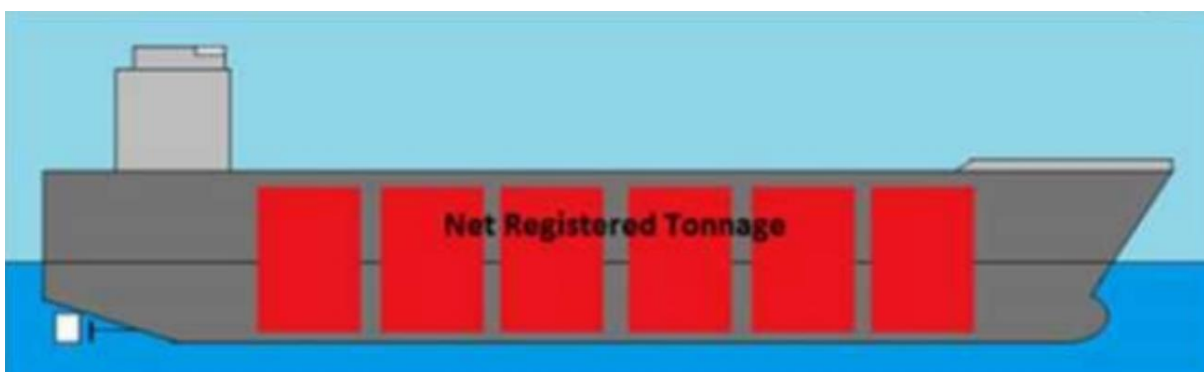
Transport of LPG and LNG: It comes in as a gaseous state from the gas field and it goes through the liquefaction facility via pipelines – which compresses the gas into a liquid state so that it can be stored. It is then loaded up onto a LNG tanker for transportation. Arriving at destination, it would be stored into LNG storage tanks. Vaporizers are needed to vaporise the liquid - to make it back into gas. It would then be connected to pipeline for its use ie. Towns, buildings.

5b.

- Gross Tonnage (GT, G.T., gt)
 - Measure of a vessel's overall internal volume, i.e. the enclosed spaces within the vessel
 - Unit: dimensionless, only an index
 - Gross Register Tonnage (GRT, grt, g.r.t.) is a measure of the volume of certain enclosed spaces
 - Replaced by GT when IMO adopted The International Convention on Tonnage Measurement of Ships in Jun 1969 Since Jul 1994, GT has been the only official measure of vessel's tonnage



- Net Tonnage (NT, N.T., nt)
 - Calculated from the total moulded volume of the vessel's cargo spaces by using mathematical formula
 - Indicate the volume of a vessel's revenue earning spaces
 - $NT = GT - \text{non-revenue earning volume}$
 - Non-revenue earning spaces, i.e. spaces not available for carrying cargoes, e.g. engine rooms, fuel tanks, crew quarters, etc.
 - Unit: dimensionless, only an index
 - Similar to GT and GRT, NT replaced the older Net Register Tonnage (NRT, nrt, n.r.t.) started from Jul 1994



5c.

- Classification of Dry Bulk Carrier:
 - Handysize - ~10,000 to 39,999DWT
 - Supramax - ~40,000 to 59,999DWT
 - Panamax - ~60,000 to 99,999DWT
 - Capesize - ~100,000DWT and above Very Large Ore Carrier (VLOC) - ~200,000DWT and above
 -
- Classification of Liquid Bulk Tanker:
 - Panamax - ~60,000 to 79,999DWT
 - Aframax - ~80,000 to 119,999DWT
 - Suezmax - ~120,000 to 199,999DWT
 - Very Large Crude Carrier (VLCC) - ~200,000DWT and above
 - Ultra Large Crude Carrier (ULCC) - ~320,000 to 550,000DWT