Property Risk Consulting Guidelines

XL Risk Consulting

A Publication of AXA XL Risk Consulting

PRC.17.24

PORT AND DOCK OPERATIONS

INTRODUCTION

Unless a country is land locked, a large percentage of its international trade will typically be via its ports. With the increase in international commerce and trade, ports have more so become crucial logistics centers. Processes to handle freight and cargo have had to be rationalized and handled as an industrial process using the most advanced concepts in logistics and technology.

Recent trends in port and dock facilities include advancement of information technology such as EDI and e-commerce, which are accelerating the integration of transport systems. Ports are also having to accommodate larger ships by deepening and widening channels and constructing new berthing facilities with sufficient water depth and length.

In general the port authorities own most of port assets such as breakwater, access channel and land. A large proportion of cargo handling equipment at container and break-bulk terminals is however owned by private companies.

In assessing property risk at a port it is importance to know the customer's business purpose and to identify ownership of property and the customer's liability toward it.

The majority of port authorities are fully responsible for navigational aids, harbor master services, dredging, and port information. Other public and private bodies provide services such as pilotage, stevedoring, towage, ship agents, land transport and other shipping services.

Property at a port is not limited to buildings and their contents, but includes mobile equipment such as the quayside or dockside cranes, rubber tire or rail mounted gantry cranes, staddle carriers, forklifts etc. This rolling equipment in fact often represents the greatest proportion of property values at a port. While cargo is generally insured under a separate policy, it is usually under the liability of the stevedore who handles it.

Significant property risks at port facilities include windstorm damage to cranes, impact damage from ships, cranes or vehicles, droppage, theft, and port blockage. Losses due to impact during berthing have increased in size and frequency in recent years, partly because of the trend to high sided ships, especially containerships and car carriers, the latter being very difficult to berth. Fires are possible in buildings and cranes, but the frequent losses at this type of facility more often come from the following:

- Vehicle collision – vehicle to vehicle and vehicle to structures
- Dropping and damage to containers. Damage due to container snag on ships.
- Ship to berth collision and ship to crane boom collision.
- Crane to crane collision

- Windstorm damage to cranes
- Fires in mobile equipment engines
- Structural collapse of cranes due to overload or design defect or poor maintenance.

PROCESSES AND HAZARDS

General Operations

There is a wide variation of operations and arrangement of property at a port facility. Operations typically include the handling of cargo, whether it be in a bulk, break bulk, containerized or liquid form, or transportation of passengers. Ports for each can be located on lakes, rivers or oceanside, however they typically include a port entrance, shipping channel, navigational aids, and ship berth areas against docks, wharves or piers. For cargo handling, the quayside (pier or dockside) cranes involved in ship to shore cargo movements, are usually the most significant equipment. At container terminals, smaller gantry cranes that can be rubber tire mounted or rail mounted are involved in stacking containers and loading them onto rail wagons or trucks. Forklifts and straddle carriers perform the same function but are more free roaming. When in a bulk form, pneumatic or rubber belt conveyors along with storage silos are often present.

Warehouses used for break bulk storage or storage that has been unloaded from containers can be located at the terminal or on a totally separated site. The same can be said for open storage yards for imported vehicles.

The whole range of port activities are based on an institutional complex involving a number of governmental agencies and maritime organizations. See PRC.17.24.A for a glossary of terms.

Container Terminals & Container Storage Yards

These are facilities receive full export containers from shippers, load vessels and deliver full import containers to the consignees. Ocean vessels are usually loaded & unloaded at the same location. Container storage yards, which are large flat open storage areas, can be on separate dedicated sites to the ship unloading operations.

Storage capacities of container storage yards and container ship sizes are often expressed in terms of TEU's. Throughput of the container terminal and loading rates of cranes are often expressed in terms of TEU's per unit time. Crane capacities could also be expressed in moves/time. A TEU (twenty foot (6.1-m) equivalent unit) refers to the volume of a standard 20-foot (6.1-m) long shipping container. Hence a standard 40-foot (12.2-m) container is two TEU's.

A container storage yard will also have a specific number of spaces with power supply connections for "reefers" – refrigerated shipping containers. The number of spaces available is often dictated by the capacity of the sites power supply and distribution.

The main equipment at container terminals are quay or dockside cranes used to load and unload containers from the vessels. Containers can be loaded directly onto trucks or relocated to the container storage yard by large purpose built forklifts or Automated Guided Vehicles (AGVs), Shuttle Strads or Multi Trailer Systems (MTSs). Rubber tire gantry cranes, rail gantry cranes, or container forklifts are used to stack containers and load them from onto trucks or rail wagons. As a result of an increased demand for high productivity and lower costs "per move", container terminals are more and more automated. This includes AGVs, which are used for the container transport from the quay to the container stacking and railway/truck terminal areas. It also includes automated container stackers (ACSs), which automatically load and unload vehicles and stack containers.

Heavy lift, break bulk, oversized loading or unloading services are often part of the container terminal operations. Container terminals often have warehouses for breakbulk cargo, equipment maintenance workshops (including spare parts storage), quarantine and customs and administration offices including IT operations associated with the shipping and storage of cargo. The terminals can be dedicated to containers or able to handle bulk materials and other commodities. Containers can

contain hazardous or dangerous goods. There are a vast variety of possible containers contents in terms of commodity type, value and weight, and susceptibility to damage

Passenger Terminals-Ferries

These are terminals for the embarkment and disembarkment of passengers and often their vehicles, to and from passenger liners and ferries. Operations at these facilities would typically include ticketing and check in along with associated IT operations. The terminals will probably involve service operations such as the loading of catering supplies, water and fuel for the ships. Customs will be present for international terminals. The terminals will often include restaurants and kitchens, retail areas, vehicle and ship maintenance facilities, stores and offices. The docks will often include loading and unloading ramps for passengers and vehicles. Buildings will often be multiple storeys and can be constructed on docks with combustible substructures.

Ro-Ro And Vehicle Storage

Roll on roll off (Ro-Ro) freight operations consist of shipments of mostly new vehicles from one country to another. Special ships are built for this cargo. The vehicles are driven individually on and off the ship via mobile ramps. The vessels are equipped with large openings at bow and stern and sometimes also on the side, providing easy access. Fully loaded trucks or trailers carrying containers can be accommodated on the deck. The Ro-Ro ramps can involve hydraulically operated mechanisms and the associated fire hazards.

Vehicles are often stored in large open yards or in parking garages either on the site or at some distance from the dock. The sites can contain dewaxing operations for the vehicles, repair shops, re-paint shops etc and associated special hazards.

The terminal operator will usually be liable for damage to the vehicles while in their custody and control and should have procedures to reduce the chance of damage e.g. a clothing policy for workers which disallows use of chains, buttons, bracelets, and anything that could scratch the car's paint or the plastic interior finishing. Similarly, protection will be required for vehicle damage as a result of hail or from residues emitted for any nearby industrial facilities.

Grain Elevator Terminals And Silo Storage Of Foodstuffs

Bulk grains and dry foodstuffs like crystallized sugar are loaded or unloaded into vessels usually via pneumatic conveying systems or via rubber conveyor belts. These facilities necessarily incorporate grain storage silos and truck or rail loading and unloading systems for grain. They can also include bagging operations.

Cargo Storage Facilities

These are warehouses and container yards, not necessarily attached to the cargo terminals. They receive cargo by rail or road and dispatch, usually by road. The operations often include container pack and unpack, full container bonding and fumigation, packaging individual orders, customs, container washing, and quarantine inspection, empty container storage, transport of full and empty containers by road or rail, and truck cleaning.

Landlords may be performing manufacturing or assembly operations in buildings used for warehousing. This practice may increase the probability of ignition.

Dry Bulk Material Handling Facilities

Bulk cargo means that the transported materials are not packaged in any way. This includes solid bulk, which keeps its three dimensional size, like wood planks, steel rods, aluminum billets or ingots, steel scrap. It also includes dry fluid bulk like sand, gravel, fertilizer (including Ammonium Nitrate), coal, grain, sugar, and wood chips. This type of bulk cargo is stored in stockpiles either in the open if the stock cannot be damaged by rain and humidity, or in sheds or silos. Bulk foodstuffs can also come into this category (see grain terminals section)

Depending on the type of bulk material, grab cranes, conveyor belt systems or pneumatic systems are utilized to move the cargo from ship to shore. The facilities can also include truck and/or rail

loading and unloading facilities. In the case of fertilizer, cement and similar products, the facilities can often include bagging operations.

Throughput of these facilities is measured in terms of tonnes per hour. In the case of conveyor or pneumatic material handling systems, an automatic material weighing system is incorporated into the equipment to avoid overloading of the vessel or vehicle.

Bulk Liquid Handling Facilities

These facilities handle loading and unloading operations for petroleum products such as crude oil, gasoline, diesel, lubrication oils and other liquid hydrocarbons, LPG, LNG and other hydrocarbons that are liquefied due to storage pressure or temperature, gaseous hydrocarbons, edible oils etc. Vessels are purpose built for these products. The jetties are typically dedicated to these products due to the specialized equipment required for pumping, electrical equipment, fire protection and pollution protection, etc. On site tankage for the commodities is often required along with truck or rail loading and/or unloading facilities. Design and protection of equipment is dependant upon the properties such as flash point and vapor pressure of the liquids and gases being handled.

Because fire exposure from these facilities is often severe, they are typically well separated from neighboring properties and other cargo handling docks and piers.

Material Handling Equipment

Ship-to-Shore (STS) Cranes

Quay side or dock side cranes load and unload containers and other cargo from ship to shore. They are typically mounted on a common set of rails so that they can move the full length of the dock. These cranes typically use electric drive motors for cable windlasses, and most of this equipment is usually located in an elevated motor room level with the boom. Power supply is usually by electric cable that feeds from a slot in the dock and is wound and unwound on a drum or reel as the crane moves along the rails. Power supply can be via a diesel driven generator located in the elevated motor room or on a level below it. Important specifications for these cranes are outreach, lifting capacity, single or double lift capacity, power supply. Lifting capacity is typically around 27 to 55 tons (25 to 50 tonnes) for containers and up to about 77 tons (70 tonnes) for heavy loads. Important protection include limit switches for moving parts, wind speed indicators, alarms and interlock, overload alarms and protection, automatic braking systems, rail clamps, stowage pins and tie downs, proximity alarms and anti collision protection container anti-snag protection, anti-truck lift protection, ship to boom anti-collision protection and twin twenty lift protection.

Each crane should have a Structural Inspection Manual (SIM) usually via the Original Equipment Manufacturer (OEM) showing via diagram the location of Fracture Critical Members (FCM) and Non Fracture Critical Members (NFCM).

Rail mounted gantry Cranes

These are smaller gantry cranes for stacking of containers or loading or unloading them to and from trucks, container trailers or rail cars. The cranes are individually operated. Power supply can be either by electric cables or an onboard diesel alternator to the electric motor drives. Lifting capacity is typically 33 to 55 tons (30 to 50 tonnes).

Rubber Tire Gantry Cranes

These cranes are similar in design, operation and lifting capacity to rail mounted gantry cranes, except that they run on wheels with pneumatic tires. Concrete beam are installed below the paved area to support the weight of the cranes and their load. Magnetic guidance systems are sometimes used to ensure that the cranes keep to their correct paths of travel. The path of travel is usually along a long row of container storage. Multiple gantry cranes can operate on the same row. These cranes are usually diesel engine driven.

Automated Container Stacker

These stackers automatically load and unload vehicles and stack the containers. They can be designed to integrate with automated guided vehicles, which carry containers from the quayside to the storage area.

Automated Guided Vehicle

AGVs are unmanned vehicles powered by diesel engines. They can carry one 20-ft to 45-ft (6.1 to 12.2-m) container or two 20-ft (6.1-m) containers. AGVs are equipped with communication and navigation systems, connected to a computerized monitoring and management system.

Container Forklifts

These are large typical diesel engine driven forklifts with the lifting capacity and arms or spreaders to handle shipping containers.

Other major equipment may include, depending upon operations of the port; ro-ro ramps, liquid products transfer arms, overhead traveling cranes, floating cranes, conveyor or pneumatic conveyor systems, and other types of cranes such as grab cranes and luffing cranes.

LOSS PREVENTION AND CONTROL

General

Cranes

For design, maintenance, inspection and safe operation of cranes, refer to the ASME B30 series on this subject.

Recommended Protection for Quay Cranes:

- Operator cabin alarms and indicators should include, wind speed, high wind alarm, load, overload, twist lock position, fire alarms, other alarms related to crane shutdown.
- Limit switch interlocks should be provided for moving parts and the regular testing of these interlocks and alarms should be part of the preventative maintenance program.
- Ship to Boom Anti-Collision Protection interlocks. These can be of the piano wire type with wires externally to the boom and each side are connected to micro switches. For these, when the wire comes into contact with part of the ship, it operates the micro switch and shuts down the crane. Unfortunately, by the time the wire contacts the ship, it is usually too late to avoid all damage. Laser type systems fulfill the same function tend to be more reliable and are installed on newer cranes.
- Container anti-snag protection interlocked to shutdown the crane hoist. These systems usually incorporate hydraulic cylinders that act like a shock absorber for the sudden tension that occurs if a container catches part of the ship as it is being unloaded. The snag is detected by load cells and then hydraulic systems add more rope into the system via cylinders / sheaves until the hoist stops. Mechanical anti-snag protection systems are also available. A special safety coupling separates the motor drives and their high mass inertia from the gearbox instantly (within 1 millisecond). Safety brakes immediately catch the load and avoid a reverse of the rope drum.
- Smoke detection in the crane motor room. If oil filled transformers are present, these should preferably be replaced with dry type transformers, or otherwise special extinguishing systems provided for them.
- Automatic gaseous extinguishing systems for the crane mounted electrical rooms. These rooms being elevated would be difficult to reach by the fire brigade. As a minimum, these rooms should have smoke detection with alarms remotely as well as in the operators cabin.

- Twin twenty protection on the spreaders. Laser type detectors or other means are used to sense the space between two 20 foot containers when being lifted by accident by a 40ft spreader. The consequence of a 40 foot spreader lifting two 20 foot containers is that they will drop from the spreader during the lift. The twin twenty protection provides alarms and interlocks.
- Operators cabins should have indicator lights showing engagement position of twist locks on the spreader as it attaches to a container.

Maintenance and Inspection of Cranes:

Crane structural inspection is paramount for this industry along with maintenance and inspection of related lifting equipment. The mechanical maintenance and inspection program should also include;

- Material handling equipment (for containers, bulk and general, general cargo, RORO, etc.).
- Twistlocks
- Brakes
- Limit Switches
- Safety Interlocks and Hard Wired Safety Devices and Emergency Stops
- Safety cages.
- Chain blocks, slings and lifting devices.
- Wire rope hoist (manual or motor-driven).
- Overhead cranes.
- Monorail hoist (manual or motor-driven).
- Spreader bar, lifting bar.
- Elevators.
- Passenger lifts, etc
- Off Road tyres

Cranes should have a Structural Inspection Manual (SIM) usually via the Original Equipment Manufacturer (OEM) showing via diagram the location of Fracture Critical Members (FCM) and Non Fracture Critical Members (NFCM) specific to each crane model. The SIM should be regularly reviewed by the maintenance management.

Welded structures can contain undetectable cracks. The crack grows when subjected to fluctuating stresses. Periodic inspection is required to detect fatigue to avoid serious failure in the structure. The inspection should incorporate non-destructive testing methods; i.e., magnetic particles, ultrasonic and dye penetrant.

The following cranes should be subject to major inspection:

- Cranes that have reached the end of their design life or, where this is unknown, after a maximum of ten (10) years of service for the mechanical components and 25 years for the structure. Old cranes which are to be re-commissioned and that do not have previous records.
- Cranes that are to be upgraded or modified.

Other crane periodic inspections should include:

- Every twelve (12) months: Inspection for all items specified by the manufacturer for periodic maintenance inspection.
- Every twelve (12) months: Inspection by appropriately qualified third party to ensure the level of maintenance and repairs is adequate.
- Every three (3) years: Major inspection, including NDT of all critical areas for evidence of cracking, fatigue and excessive stress.

Note: For new cranes, major inspection should be performed after a number of years in service (for example, 10 years), providing the yearly inspection does not identify any structural problem.

- After ten (10) years: Assessment for continued operation for mechanical.
- After 25 years: Assessment for continued operation for structures.
- Spreaders and Lifting: Non-destructive testing on spreaders should be conducted as part of their regular inspection and maintenance programmes. When the age of the spreader is not known, such programmes should take into account the age, intensity of use and whether the usage is regularly close to its maximum capacity.

Passenger Terminals-Ferries

Protect passenger ferry terminals in accordance with NFPA 307.

Ro-Ro And Vehicle Storage

Protect Ro-Ro ramps utilizing hydraulically operated equipment in accordance with PRC.9.2.4.

Protect the spray booth areas in accordance with NFPA 33 and PRC.9.2.3.1.

Grain Elevator Terminals And Silo Storage Of Foodstuffs

Protect these areas from explosion in accordance with NFPA 61 and PRC.9.3.2.0 and PRC.9.3.2.1. Protect the belt conveyors in accordance with PRC.9.3.1.

Cargo Storage Facilities

Protect warehouse buildings in accordance with NFPA 13 and PRC.12.1.1.0.

Protect refrigerated storage and warehouse facilities in accordance with PRC.10.2.11.

Bulk Liquid Handling Facilities

Protect bulk liquid handling facility in accordance with PRC.9.2.1.1, PRC.9.2.1.2, PRC.17.3.2, PRC.17.3.3 and PRC.17.3.4.

Infrastructure

In relation to port facilities, infrastructure refers to such features as the quay or dock hardstands and substructure, pylons, the paved yard, foundations beneath heavy equipment and site utilities.

Port Facilities Construction and Condition

Relevant to this feature are:

- The construction materials used for jetties, docks, and roll on roll off ramps. Jetties with a wooden substructure present a fire hazard, and NFPA 307 requires sprinkler protection for these areas.
- The condition of the structure and particularly the support pylons. Corrosion can be a significant factor where metal supports are used. Corrosion can compromise the strength of the structure and lead to collapse losses. Similarly wooden support pylons are subject to decay, which could compromise the strength of the structure.
- The presence and condition of roll on and roll off ramps. (Power supply, electrical equipment, hydraulic equipment, presence of large oil reservoirs and pumps, protection, cut-offs etc.) Refer to PRC.9.2.4 for further protection requirements.
- Adequacy of foundations beneath the quay side cranes to avoid settlement issues. Water accumulation can be a sign of settlement.
- The depth of the water in the basin will affect the risk of vessel grounding.
- The presence of locks and sluices will affect the chance of a business interruption risk through breakdown of their operating equipment.

- The presence of sea walls may be needed to protect the berths from wave action.

Land side

Land side of a port is the typically flat storage and traffic handling yard located behind the quayside cranes.

Relevant to this feature are:

- Landfill for the site. Whether or not the site has been built on reclaimed land will affect the risk of settlement under heavy equipment such as the quay-side cranes. Because these are high structures, a relatively small settlement can affect the stability of this equipment and the risk of toppling. Undulations in the paved surface of the yard, due to settlement, will affect the stability of mobile equipment such as the forklifts and straddle carriers and increase the risk of droppage or collision.
- Site drainage will affect the risk of pollution or fire from leaking cargo, especially that from containers holding dangerous goods.
- Presence and condition of paving across the site including load bearing capability. Terminal surfaces are usually of asphalt or interlocking concrete pavers. The pavement has to support heavy mobile equipment carrying containers that can weigh 30 tons (28 tonnes). The presence of potholes, undulations, cracking or the absence of pavement can affect the risk of droppage or collision.
- Layout of storage, equipment and traffic routes can affect the risk of collision between vehicles, and between vehicles and buildings, and between vehicles and storage or equipment. Neat orderly well spaced layouts reduce these risks as do traffic control practices such as one way routing of trucks.
- The presence and arrangement of tank farms and underground tanks will affect the risks of fire and pollution.
- Proximity to neighboring properties or bush will affect the risk from fire.

Utilities

A port facility will typically have an electrical power supply from an offsite supplier, some means of on site emergency power supply, public potable water supply, fire water supply, diesel and other onsite fuel supply, and for the case of bulk handling facilities, compressed air for pneumatic conveying systems. Some other facilities such as bulk liquids handling facilities will have other utilities such as steam and inert gases.

For the typical container terminal, electrical power supply is the most critical utility. The quay side cranes include a number of large motor drives that can vary up to about 225 Hp (300 KW) in size. Electrical transformers are typically in substations around the site, but can also be located in the crane motor rooms themselves. Smaller gantry cranes often carry their own on board dedicated diesel driven alternator which power the electric drives on the crane. This can also be the case for quay side cranes. Another large power supply user at these sites are the “reefer” or refrigerated containers. Loss of power supply will normally result in a full shutdown of production and could result in spoilage of some refrigerated commodities. Most sites will have emergency generators, however usually not sufficient to maintain full site operation. Depending on the number of reefer points, this could be the area with the largest power consumption. The containers are fairly well insulated and, depending on the outside temperature, should be capable of maintaining the temperature over a long period. If there is not sufficient emergency generating capacity, the site should have a plan to rotate the power supply between containers.

Relevant to the electrical power supply risk are:

- Redundancy in supply
- Looped supplies
- Maximum demand versus installed capacity

- Arrangement and protection of substations, transformers and cables
- Physical routing of supply cables, e.g. exposed along jetty, or supply routed via bridges
- Up to date electrical drawings including one line diagrams for the site.
- Maintenance and inspection programs for circuit breakers, transformers, distribution boards, motors, etc. Infra red scanning, transformer gas in oil analysis, and lightening arresting system maintenance system testing are critical part of these programs.
- Potential PCB contamination.
- Availability of spares or otherwise contingency planning.
- Power supply arrangements for reefer units and other refrigeration systems.
- Emergency power generation capacity.
- Lightning protection

Protect and maintain electrical equipment in accordance with NFPA 70 and PRC.5.0.3, PRC.5.9.0.1, PRC.5.9.0.2, PRC.5.9.1, PRC.5.9.2, PRC.5.9.3, PRC.5.9.4, and PRC.6.2.1.1.

Fuel

At port facilities, diesel is commonly used as the fuel for forklifts, staddle carriers and the engine driven alternators on gantry cranes. Therefore, it is not usual that the site has its own diesel storage facility and refueling station.

Arrange and protect diesel and other fuel storage facilities in accordance with NFPA 30 and PRC.8.1.0. The storage and refueling station should be well separated from other assets and include adequate secondary containment. Ground contamination exposure due to leaking underground tanks should be assessed. Alternative supplies and contingency plans for the loss of fuel supply should also be assessed. Tank filling procedures to prevent static ignition and overfill should be in place.

Port Blockage

This hazard refers to the grounding or sinking of a vessel in the channel or harbor leading to the berths, which therefore interrupts the passage of other vessels to the dock.

Information taken into account in assessing the risk will include:

- Vessel sizes and types using the port or harbor
- Maximum vessel size and maximum draft
- Navigational channel width, length, shape, route and minimum depth
- Number of entrances and capacity (maximum ship sizes)
- Frequency and depth of channel dredging and responsible party
- Minimum depth at berth
- Berth orientations, locations, navigation aids (leads and lead sensitivity, marks and buoyage)
- Traffic density profile
- Use of pilots and/or tug boats
- The tidal regime
- Cross currents
- Weather limitations
- Types of cargoes
- Communication or radar blackspots
- Emergency procedures including for sinking ships
- Alternative arrangements and contingency plans
- Blockage exposures from maloperation or failure of lock gates, opening span bridges, overhead power lines, etc. and pre-emergency plans for such incidents.

Impact Hazard - via Sea

Vessels can impact navigational aids on their way to dock, collide with and damage the dock itself, or contact and damage equipment on the dock such as the Quay side cranes themselves.

Information taken into account in assessing the risk will include

- Size of vessels
- Construction of dock
- Condition of dock and it's pillions
- Protection and maintenance of dock with collision barriers/bumpers. Purpose built devices rather than "homemade" devices such as tires are preferred. Proper anchorage is critical
- Procedural arrangements for pilot boat assistance during berthing
- Orientation of vessel during approach
- Maximum approach speed
- Approach speed indicators and alarms
- Weather limitations for berthing
- Length of births
- Ability to move quay side cranes from the berthing area of the dock and procedural arrangements to do this
- Overhang of equipment with respect to the dock.

See also "Ship Berthing Procedures" under the management program section.

Impact Hazard - On Land

Ports and docks typically involve continual movements of forklifts and trucks and often rail sidings. The heavy vehicle traffic means that there is a high risk of collision between vehicles, or between vehicles and rail or rubber tire gantry cranes, dockside cranes, trains or stationary equipment or buildings. It is also possible for cranes, which are located on the same rails or rubber tire tracks to collide due to operator error.

Information taken into account in assessing the risk will include:

- The type and traffic volume around the site
- The layout and arrangement of storage and buildings versus traffic routes
- Restriction of public traffic (pedestrian and vehicles) from the site
- Site access control via guarded entrances and number of entrances
- Bollard protection of buildings and fixed equipment
- Use of third party or employee drivers
- Driver training and certification for various vehicle types
- Enforcement of speed limits on site. Some sites perform random speed checks using hand held radar devices like traffic police do on public roads.
- Site induction training and information with respect to traffic
- Routing of trucks in a one way path around the site.
- Limited access to the container yard
- Traffic signs and controls e.g. stop signs where truck routes cross the paths or rail or rubber tire gantry cranes
- Proximity limit switches or alarms on cranes mounted on the same tracks
- Trains – control of rail traffic, safety rules, pay close attention to areas where road and rail infrastructures share common site.

See also "Traffic Control" under the management programs section.

Windstorm Exposure

Many of the largest losses at ports and docks have been due to windstorm damage. These have involved cranes being toppled by the winds or pushed along their tracks until they collide with other equipment or topple at the end of the track.

Information taken into account in assessing the risk will include:

- Windstorm exposure for the area including maximum expected windspeed
- Windstorm design of the cranes
- Windstorm procedural arrangements for the dock.
- Braking systems for cranes. Adequately designed braking systems are no substitute for tie down pins and anchors.
- Automatic rail clamps
- Tie down procedures for cranes
- Tie down pins and anchors available for cranes, number and spacing of anchor points, design loads of anchor pins and anchor points.
- Shift hand over procedures.
- Parking and anchoring of cranes when not in use.
- Wind speed indicators, alarms and interlocks within cranes and site wide wind speed alarms and shut down procedures.
- Regular calibration of wind speed alarms and interlocks.
- Wind socks to show direction of wind
- Regular checking from weather services for approaching high wind conditions.
- Signs of windstorm damage to buildings, e.g. missing or damaged roof panels.

Refer to the ASME B30 series on cranes.

Dangerous Goods

Dangerous goods can be handled at a port in bulk, such as at a bulk fuel or chemical facilities. The International Maritime Organization (IMO) has also created the International Maritime Dangerous Goods Code (IMDGC). The IMO, which was set up by the United Nations, has over 160 member countries. Most countries have adopted the IMDGC. See also PRC.9.2.1.1, PRC.9.2.1.2, PRC.17.3.2, PRC.17.3.3, and PRC.17.3.4 for additional guidance.

Where containers are used for the transportation of dangerous goods, the storage should be in a separate designated area. Information, which should be taken into account in assessing the risk, will include:

- The system of identification of dangerous goods containers
- The types of dangerous cargo handled (see Glossary for IMDG classes)
- Procedural arrangements for the loading and unloading of dangerous goods containers
- Segregation of storage of dangerous goods where chemicals are incompatible
- Drainage and secondary containment for dangerous goods container storage areas
- Segregation for dangerous goods storage areas with respect to other significant property and storage
- Fire protection and water supply
- Spill control equipment on the dock or owned by the harbor authority
- Emergency procedures for spill and fire.

Fire

Ports and dock facilities are typically large facilities, with a variety of buildings and occupancies. Determine fire water supply needs in accordance with PRC.14.0.1. Protect these facilities in accordance with NFPA 13 and PRC.12.1.1.0. In particular, cargo warehouses will normally constitute large values and significant combustible loading.

Fire protection in crane motor rooms deserves special attention because these rooms are typically elevated in the crane structure and with very difficult access for fire brigades. A total flooding clean agent extinguishing system may be warranted in these rooms where they contain oil insulated switchgear or transformers. In such cases, combustible loading will be sufficient to cause structure damage to the crane. NFPA 307 also asks for this protection in all cases where the rooms are more than 100 ft (30 m) off the ground. As a minimum, the rooms should be fitted with automatic smoke detection, alarming in the cabin and at the site's main fire alarm panel even where there is low combustible content and they are less than 100 ft (30 m) elevated above the dock. Air sampling type smoke detection systems are preferred for this application. There should also be a written fire response plan that includes how a fire will be fought in the motor room. Responding public fire brigades should be involved in the planning.

Automatic sprinkler protection for combustible substructures on wharves and piers should be in accordance with NFPA 307. Fire divisions in these substructures should also be provided as required by NFPA 307.

Fire protection of fuel storage facilities and bulk chemical facilities should be in line with PRC.9.2.1.1, PRC.9.2.1.2, PRC.17.3.2, PRC.17.3.3, and PRC.17.3.4.

Fire protection of conveyor belts should comply with PRC.9.3.1

Fire protection of transformers should comply with PRC.5.9.2

Fire and explosion protection of grain handling facilities should comply with NFPA 61.

Busy container terminals often contain computer rooms that are vital to the operation of the facility. In such cases, automatic special extinguishing systems should be provided for these rooms. The design of these systems should be in accordance with NFPA 2001.

Typically the sites use a large fleet of vehicles and it is common for the site to have it's own fuel storage and fueling stations for these vehicles, including diesel, gasoline, LPG and CNG fueling stations. Refer to appropriate PRC Guideline and NFPA codes for recommended protection arrangements.

Some of the large forklifts can be high value and an engine fire in itself can cause a significant fire loss. Engine bay fires are common, and these are usually caused by hydraulic fluid leaks onto hot engine parts. Automatic fire protection systems can include automatic foam, automatic dry chemical or automatic water mist systems actuated by heat detectors or plastic air tube in the engine bay and with nozzles in the engine bay. Agent cylinders are usually mounted near the engine bay. Protection normally includes an interlock to shutdown the engine. Shield of hydraulic lines from hot parts of the engine and good maintenance can help reduce the chance of this kind of fire.

The spread of fire amongst outside container storage is likely to be slow unless the containers contain dangerous goods. Locate hydrants at least 300 ft (90 m) on centers around container yards.

Business Interruption

Consider the following when assessing the business interruption potential:

- Availability of alternate facilities available with written agreements for use.
- Availability of reserve loading/unloading capacity in the event of unavailability of a major piece of equipment. The availability of critical spare parts can significantly reduce downtime. Leased or "hired" mobile cranes may be able to make up part of the capacity of an unavailable gantry crane. Temporary use of mobile cranes should be requires a safety analysis.

- If passage through another facility is planned during a blockage of any type; written agreements should be in place. The availability of alternate shipping lanes should be analyzed.
- The need to be able to relocate to a “hot” or “cold” site depending on the criticality of computer control.

Water Pollution

Because these facilities adjoin waterways and handle large volumes and a great variety of cargo, including liquid chemicals, there is a significant risk of water pollution.

Relevant to this risk are:

- Signs of water pollution
- Water pollution control for the site
- Availability of spill control kits
- Spill control emergency plans
- Large scale spill control equipment
- Hazardous and Dangerous goods handling procedures
- Use of underground tanks and the design of these tanks.
- Ground contamination testing

Site Security

In general, port facility security would include perimeter fencing, adequate night lighting, access control for employees, drivers, contractors and visitors, 24 h security guard service, closed circuit TV surveillance and intrusion detection for entry into buildings when unattended. It is important that the general public is not permitted unaccompanied access to these sites.

Additional emphasis on port facility and ship security has been applied with the introduction by the IMO of the International Ship and Port Facility Security Code (ISPSC). This code came into effect on July 1, 2004 and must is adopted by the member countries of the IMO.

See PRC.1.11.0, PRC.1.11.0.A, PRC.1.11.0.B, and PRC.1.11.0.C for additional information.

ISPS Code

The International Ship and Port Facility Security (ISPS) Code, was designed to establish an international framework involving co-operation between contracting governments, government agencies, local administrations and the shipping and port industries to detect security threats and take preventive measures against security incidents affecting ships or port facilities used in international trade.

A port facility is required to act upon the security levels set by the Contracting Government within whose territory it is located. The contracting government is responsible for a security assessment of the port, which should include the following elements:

- Identification and evaluation of important assets and infrastructure it is important to protect;
- Identification of possible threats to the assets and infrastructure and the likelihood of their occurrence, in order to establish and prioritize security measures;
- Identification, selection and prioritization of counter measures and procedural changes and their level of effectiveness in reducing vulnerability; and
- Identification of weaknesses, including human factors in the infrastructure, policies and procedures.

On the basis of the security assessment develop a port security plan based on:

- Measures designed to prevent weapons or any other dangerous substances and devices from being introduced into the port facility or on board a ship;

- Measures designed to prevent unauthorized access to the port facility, to ships moored at the facility, and to restricted areas of the facility;
- Procedures for responding to security threats or breaches of security, including provisions for maintaining critical operations of the port facility or ship/port interface;
- Procedures for responding to any security instructions the contracting government may give at security level 3;
- Procedures for evacuation in case of security threats or breaches of security;
- Duties of port facility personnel assigned security responsibilities and of other facility personnel on security aspects;
- Procedures for interfacing with ship security activities;
- Procedures for the periodic review of the plan and updating;
- Procedures for reporting security incidents;
- Identification of the port facility security officer including 24-h contact details;
- Measures to ensure the security of the information contained in the plan;
- Measures designed to ensure effective security of cargo and the cargo handling equipment at the port facility;
- Procedures for auditing the port facility security plan;
- Procedures for responding in case the ship security alert system of a ship at the port facility has been activated.
- Procedures for facilitating shore leave for ship's personnel or personnel changes, as well as access of visitors to the ship including representatives of seafarers' welfare and labor organizations.

The port security officer is responsible for the implementation and exercising of the port security plant. The code lists 13 specific responsibilities for this officer and requirements for training and drills and exercises.

The code covers ship security and port facility security separately. Ships require similar steps to the above and verifications that code compliance has been achieved before issue of an "International Ship Security Certificate".

MANAGEMENT PROGRAMS

Maintenance and Inspection - develop a maintenance and inspection program based on PRC.1.3.0. For crane maintenance, refer to the applicable code in the ASME B30 series. A corrosion control program for large cranes is important.

Windstorm Procedures for Cranes – develop windstorm procedures based on PRC.2.0.1.1.

Traffic Control – develop a program for the prevention of impact from vehicles on the site to include the following features:

- One way trucking routes with arrows and markings indicating their route. A color coding scheme can be used where there are several routes.
- Minimizing sharp bends and blind corners and using convex mirrors where there are blind corners.
- Traffic signs along truck routes throughout the site and in particular, stop signs where the routes cross the tracks of gantry cranes
- Speed limits signs throughout the routes and enforcement of these speed limits via random speed checks
- Bollard protection for hydrants, light poles, transformers and other equipment where exposed to collision from vehicles.

- Roadways kept clear of obstacles, debris and oil.
- Vehicles must be maintained in good repair, be fitted with the required safety devices and be included in a comprehensive preventative maintenance program.
- Processes in place to prevent unsafe vehicles from being used and for drivers to report unsafe conditions.
- Training of employees and third party drivers in these rules in addition to the licenses required for specific vehicles and regular assessments for competency.
- Site maps and instructions provided at the site entrance to truck drivers.
- Strict rules prohibiting vehicles being driven while the drivers are under the influence of drugs, alcohol, are fatigued or are fasting.
- Procedures to ensure that loads are properly secured
- Procedures to ensure brake mechanisms are fully engaged when mobile vehicles and equipment are not in use or idle.
- Procedures for (outside) truck drivers. Are they prohibited from leaving their vehicle, while in the container yard or do they have to leave the truck and move to a safe position, while containers are loaded.
- Minimize pedestrian and vehicle traffic in yard
- Design and controls to limit speed
- Turning controls for straddle cranes to limit turning angle based on speed
- Conformance to ISO standards for straddle cranes regarding stability
- Control of tire types and pressures

Ship Berthing Procedures – develop a program for the prevention of impact from ships that include but not be limited to:

- A strict definition of communication method, language and media.
- Vessel arrival notification
- Confirmation of vessel movement schedule
- Clear requirements for training and simulator practice
- Approach speed limits
- Rules with regards use of pilot vessels
- Rules restricting berthing during high winds or low visibility
- Rules with regards vessel meeting or overtaking in the channel and path through the channel
- Rules prohibiting entrance or maneuvering within the harbor or channel without radio clearance from the port.
- Rules regarding minimum clearances to be maintained between vessels.
- Special rules for vessels containing dangerous cargoes

Cargo Handling Procedures

To prevent droppage of damage to containers and cargo, develop a set of procedures to include but not be limited to:

- Only using cargo handling equipment designed for the purpose.
- Using safety equipment such as load weight indicators on cargo handling equipment,
- Never handling loads in excess of the weight ratings for equipment used, including cranes, forklifts, cables, hooks and spreaders,
- Updating loading and unloading operations manuals (including instructions when to stop operation – e.g high winds, limited visibility, etc.)
- Use of a container location system

- Using strict policies and procedures for the handling of hazardous and dangerous goods.
- Using special procedures for containers with high value or special goods, easily damaged goods, and reefer containers.

For additional guidance on dropping perils see PRC.16.2.

Document Security And Control For The Prevention Of Theft And Missing Cargo

These procedures are necessarily different for each type of operation. Features may include:

- A system of reconciliation of shipping orders and freight forwarding numbers.
- Paperwork that contains the appropriate marking and seal numbers of containers.
- Documentation for truck drivers which details Loose Container Load (LCL) pickup contents that their trucks contain
- The picking sheets at warehouses containing company marks, folio numbers and account numbers
- Procedures for the logging in, inspection of paperwork and logging out of trucks which carry containers or cargo.
- For FAK (Freight All Kind) import, documentation including a shipping line delivery order and delivery docket, and forwarders manifest. When the container is delivered at a warehouse, the container number and seal number should be checked by the warehouse staff against that on the manifest. Once the seal is then broken, the container contents should be checked off against the manifest before storage in the warehouse. The locations of the goods should be entered into a computer system for easy of picking sheet generation.
- Customs and quarantine staff should be notified as required and fumigation of the container should take place as required.

1. An audit procedure for the document control system.
2. For additional guidance on theft control see PRC.16.3.

Other Surveillance and Security Issues

Because port and dock facilities are located throughout the world, there are varying degrees of risk form strikes and a hostile local population. Local legal systems may be extremely complex or non-existent. Local procedures to manage these issues should be appropriate to local conditions. The local condition may change over time and the procedures should change with it.

Management of Change

As shippers strive to increase the cargo carrying capacity of their ships, port and dock facilities may need make modifications to accommodate this increased capacity. Modifications may be made to cranes to allow them to handle higher loads from taller ships and piers may need to be reinforced to handle the increased loads. A written management of change program should be in effect that requires certification of changes by appropriate professionals such as structural or soils engineers.

Other Management Programs

Other important human element programs for ports and dock facilities include; hazardous cargo handling and storage, business continuity plans, employee training and especially for drivers and crane operators including the provision of appropriate operating manuals. Gantry crane operation requires an extremely high degree of skill and simulator training is the expected. In addition, loss prevention programs such as smoking control, hot work control, housekeeping, impairment management, contractor management, fire equipment inspection testing and maintenance etc. apply as they do to any industrial risk. Refer to PRC Guidelines Section 1 for an outline and discussion of individual loss prevention management programs.

GLOSSARY OF TERMS

A/B or ABLE BODIED SEAMAN - A member of the deck crew who is able to perform all the duties of an experienced seaman; certificated by examination and has three years sea service. Also called Able Seamen and A.B.

ABS - American Bureau of Shipping: A U.S.-based private classification, or standards setting society for merchant ships and other marine systems.

ADDENDUM - Additional terms at the end of a charter party.

AMS AUTOMATED MANIFEST SYSTEM: An application that expedites the clearance of cargo for the subsequent release of containers when imported to the U.S. through electronic submission of cargo manifests in lieu of bulk paper manifests.

ANCHOR HANDLING TUG - Tug that moves anchors and tow drilling vessels, lighters and similar. Also **ANCHOR HANDLING TUG/SUPPLY** used also for supplies

ARRIVAL NOTICE: An advice that the carrier sends to the consignee advising of goods coming forward for delivery. Pertinent information such as BL number, container number and total charges due from consignee etc, are included and sent to consignee prior to vessel arrival. This is done gratuitously by the carrier to ensure smooth delivery but there is no obligation by the carrier to do so. The responsibility to monitor the transit and present himself to take timely delivery still rests with the consignee.

AUTOMATIC PILOT - An instrument that controls automatically a vessel's steering gear to enable her to follow a pre-determined track through the water.

BAGGED CARGO - Various kinds of commodities usually packed in sacks or in bags, such as sugar, cement, milk powder, onion, grain, flour, etc. Also referred to as breakbulk.

BALLAST - Heavy substances loaded by a vessel to improve stability, trim, sea-keeping and to increase the immersion at the propeller. In the days of sail rocks and sand were used. Modern ships use seawater loaded in ballast tanks placed at the bottom of the ship, or in some cases on the sides called wing tanks. Tankers admit ballast water into the cargo tanks to submerge the vessel to a proper trim. When ballast tanks are not connected with the cargo system they are referred to as **SEGREGATED BALLAST TANKS.**

BARGE - Flat-bottomed boat for carrying cargo on protected waterways, usually without engines or crew accommodations. On inland river systems barges can be lashed together and either pushed or pulled by tugs and handle cargo of 60,000 tonnes or more. Small barges for carrying cargo between ship and shore are known as lighters.

BEAM - The width of a ship. Also called breadth.

BELT LOADER - A vehicle equipped with an adjustable height belt conveyor designed for loading/unloading bulk cargo

BILL OF LADING (B/L) - A document of title to the goods being carried on the ship, which acts as a receipt for the cargo and contains the terms of the contract of carriage.

BLOCK TRAIN - Railcars grouped in a train by destination so that segments (blocks) can be uncoupled and routed to different destinations as the train moves through various junctions. Eliminates the need to break up a train and sort individual railcars at each junction.

B/L TON (also Freight Ton) - the greater weight or measurement of goods where 1 tonnes is either 1,000 kg or 1 cubic meter.

BOATSWAIN (BOSUN) - The highest unlicensed rating on the ship with charge of all deck hands and who in turn comes under the direct orders of the master or chief mate or mate.

BONDED WAREHOUSE - An area of security approved by custom authorities for the safekeeping or deposit of goods liable for excise duty but not yet subject to that duty.

BOW THRUSTERS - A propeller at the lower sea-covered part of the bow of the ship, which turns at right angles to the fore-and-aft line and thus provides transverse thrust as a maneuvering aid.

BOX - Common term for an ocean going freight container.

BOXCAR - A closed freight car.

BREAKBULK VESSEL - A general, multipurpose, cargo ship that carriers cargoes of non-uniform sizes, often on pallets, resulting in labor-intensive loading and unloading.

BREAK BULK CARGO - Goods carried in the hold of ships and not in containers.

BULK - Cargo shipped in loose condition and of a homogeneous nature. Cargoes that are shipped unpackaged either dry, such as grain and ore, or liquid, such as petroleum products. Bulk service generally is not provided on a regularly scheduled basis, but rather as needed, on specialized ships, transporting a specific commodity.

BULK CARRIER - Ship specifically designed to transport large amounts of cargoes such as sugar, grain, wine, ore, chemicals, liquefied natural gas; coal, ore etc. See also LNG Carrier, Tanker, OBO Ship.

BULKHEAD - A name given to any vertical partition which separates different compartments or spaces from one another.

BULL RINGS - Cargo-securing devices mounted in the floor of containers; allow lashing and securing of cargo.

BUOY - A floating object marking the navigable limits of channels, sunken dangers, isolated rocks, telegraph cables etc.

CABOTAGE - The carriage of goods or passengers for remuneration taken on at one point and discharged at another point within the territory of the same country.

CARGO HANDLING - The act of loading and discharging a cargo ship.

CARGO LOADER - Mobile equipment with elevation platforms and powered rollers for loading/ unloading ULDs on airplane main decks or lower lobes. It may be “scissor” or “post” design, or a forklift equipped with a non- powered roller platform.

CARGO PLAN - A plan giving the quantities and description of the various grades carried in the ship's cargo tanks, after the loading is completed.

CARRIERS - Owners or operators of vessels providing transportation to shippers. The term is also sometimes used to refer to the vessels, i.e. ore carriers.

CERTIFICATE OF REGISTRY - A document specifying the nation registry of the vessel.

CHECK DIGIT NUMBER - A single digit of the air waybill number used to insure that the air waybill number is correctly entered into a computer system.

CHIEF ENGINEER - The senior engineer officer responsible for the satisfactory working and upkeep of the main and auxiliary machinery and boiler plant on board ship.

CHIEF MATE - The officer in the deck department next in rank to the master; second in command of a ship.

CLASSIFICATION SOCIETY - Private organizations that undertake inspections and provide advise on the hull and machinery of a ship, also supervise ships during their construction and afterwards in respect to their seaworthiness. Ships are then referred to as being 'in class'. Although not compulsory, an unclassed ship will find it difficult to attract insurance.

CLEAN SHIP - Refers to tankers, which have their cargo tanks free of traces of dark persistent oils, which remain after carrying crude and heavy fuel oils.

COGSA - Carriage of Goods by Sea

COLLISION AVOIDANCE SYSTEM - Electronic system commonly used to prevent collisions in inland navigable waterways.

COMPLEMENT - The number of officers and crew employed upon a vessel for its safe navigation and operation.

CONSIGNEE - The person to whom cargo is consigned as stated on the bills of lading.

CONSIGNOR - The person named in the bill of lading as the one from whom the goods have been received for shipment.

CONTAINER - A steel box of a given measurement used for the carriage of goods, often referred to as a TEU (20 ft equivalent). Can be a standard container, usually either 20 ft or 40 ft (6 m or 12 m) in length, a reefer container for refrigerated cargo, a flatrack standard or collapsible container, or an open top container type.

CONTAINER FREIGHT STATION (CFS, C.F.S.) - Consolidation depots where parcels of cargo are grouped and loaded into containers.

CONTAINER LOAD PLAN (CLP) A document prepared to show all details of cargo loaded in a container, e.g. weight (individual and total), measurement, markings, shippers, consignees, the origin & destination of goods, and location of cargo within the container.

CONTAINER NUMBER – the unique identification of a container.

CONTAINER SEAL NUMBER - The number of high security seals provided by OOCL.

CONTAINER SIZE - The length of a container i.e. 20', 40' and 45' (feet).

CONTAINER TERMINAL - Also referred to as a Container Yard (CY). A facility that receives full export containers from one shipper to loading the vessel and delivers full import containers to the consignee after; it is the same location where ocean vessels are loaded & unloaded.

CONTAINER TYPE - The purpose of a container of which the code is to be adhered to ISO standard.

CONTAINER SHIP - a ship designed to handle containerized cargo. A fully cellular container ship is one that carries no cranes and is reliant on shorebased cranes for loading and discharging. Container ships' hulls are divided into cells accessible through large hatches into which the containers fit. Specialized types of container ships are the LASH and SeaBee, which carry floating containers (or "lighters,") and Ro-Ro ships, which may carry containers on truck trailers.

CUBIC CAPACITY - The most important commercial measurement when the intrinsic weight of the cargo is so low that the ship becomes full without being loaded to the cargo line. Is expressed in cubic meters or cubic feet.

CUSTOMS DECLARATION - A statement, oral or written, attesting to the correctness of description, quantity, value, etc., of merchandise offered for importation into the United States.

CUSTOMS BONDED WAREHOUSE - A public or privately owned warehouse where dutiable goods are stored pending payment of duty or removal under bond. The storage or delivery of goods are under the supervision of customs officers and if the warehouse is privately owned the keeper has to enter into a bond as indemnity in respect of the goods deposited, which may not be delivered without a release from the customs.

CY/CFS Cargo loaded in a full container by a shipper at origin, delivered to pier facility at destination, and then devanned by the carrier for loose pick up.

CY/CY Cargo loaded by the shipper in a full container at origin and delivered to the carrier's terminal at destination for pick up intact by consignee.

DANGEROUS GOODS - The United Nation's official term for Hazardous Materials. Articles or substances which are capable of posing a significant risk to the health or safety of the general public when transported by air and which are classified according to the most current editions of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air and the IATA Dangerous Goods Regulations. See Hazardous Materials.

DAVITS - Two radial cranes on a ship, which hold the lifeboats, which are used to lower and lift lifeboats.

DEADWEIGHT (DWT) - A common measure of ship carrying capacity, equaling the number of tonnes of cargo, stores and bunkers that the ship can transport. It is the difference between the number of tonnes of water a vessel displaces 'light' and the number of tons it displaces when submerged to the 'deep load line'. A ship's cargo capacity is less than its total deadweight tonnage. The difference in weight between a vessel when it is fully loaded and when it is empty (in general transportation terms, the net) measured by the water it displaces. This is the most common, and useful, measurement for shipping as it measures cargo capacity and is usually used when referring to liquid and dry bulk ships.

DEEP STOWAGE - Any bulk, bagged or other type of cargo stowed in single hold ships.

DEDICATED UNIT TRAIN - A unit train operated by various railroads for exclusive usage.

DELIVERY ORDER - A document authorizing delivery to a nominated party of goods in the care of a third party. Can be issued by a carrier on surrender of a bill of lading and then used by the merchant to transfer title by endorsement.

DEMURRAGE - A fee levied by the shipping company upon the port or supplier for not loading or unloading the vessel by a specified date agreed upon by contract.

DEPOT CONTAINER - Container freight station or a designated area where empty containers can be picked up or dropped off.

DERRICK - A ship-mounted crane used to lift cargo on and off a ship.

DOLLY - A piece of equipment used to move containers or pallets around the airport with the aid of a tractor.

DREDGER - A self-propelled vessel used to recover silt from the bed of a river, port, estuary etc.

DEVAMPING - The removal of cargo from a container. Also known as unstuffing, unloading or stripping.

DOCK - The water alongside a pier or wharf. (b) Loading or unloading platform at an industrial location or carrier terminal.

DOCK RECEIPT - A form used to acknowledge receipt of cargo at a steamship pier. When delivery of a foreign shipment is completed, the dock receipt is surrendered to the vessel operator or the operator's agent and serves as basis for preparation of the ocean bill of lading.

DRAY - A truck or other equipment designed to haul heavy loads.

DRAFT - The depth of a ship in the water. The vertical distance between the waterline and the keel, is expressed in meters except in the USA where it is in feet.

DRY CARGO SHIP - Vessel that carries all merchandise, excluding liquid in bulk.

DRY DOCK - An enclosed basin into which a ship is taken for underwater cleaning and repairing. It is fitted with watertight entrance gates which when closed permit the dock to be pumped dry. Sometimes has two or more compartments separated by watertight doors. Dry docks are also referred to as Graving Docks.

DST DOUBLE STACK TRAIN - Rail or train capable of carrying two 40 ft containers, one on top of the other.

DUNNAGE - A term applied to loose wood or other material used in a ship's hold for the protection of cargo.

DWT - Deadweight tonnes.

ELECTRONIC DATA EXCHANGE (EDI) - A computerized system for communicating information about a shipment, including tracking and tracing, air waybill information and customs documentation.

EMBARGO - Temporary refusal to accept traffic for transportation at certain points or in certain routes due to emergencies, limitation of facilities, or other abnormal circumstances.

EVEN KEEL - When the draft of a ship fore and aft are the same.

FAK - Freight all kinds - a system where freight is charged per container, irrespective of the nature of goods and not according to tariff.

FAS - Free Along Side (of ship).

FEU - Forty-Foot Equivalent Units (Containers).

FIXTURE - Conclusion of shipbrokers negotiations to charter a ship - an agreement

FLAGS OF CONVENIENCE (FOC) - The registration of ships in a country that offer favorable tax structures and regulations; also the flag representing the nation under whose jurisdiction a ship is registered. Ships are always registered under the laws of one nation but are not always required to establish their home location in that country. FOC states often offer low tax rates and their requirements concerning manning or maintenance are not stringent. The term always denotes registration of vessels in foreign nations.

FOB (FREE ON BOARD) - Cost of a product before transportation costs are figured in.

F.O.B. - Free on Board. Export term in which the price quoted by the exporter does not include the costs of ocean transportation, but does include loading on board the vessel.

FORECASTLE - The raised part of the forward end of a ship's hull, taking its name from the days of sailing ships where the forecastle was effectively a 'castle' on the ship's prow used for defending the ship. On some ships this area may be used for crew accommodation or quarters but on most new ships the space is used for the storage of paints, tackle, deck and engine stores, tarpaulins, etc.

FOREIGN TRADE ZONE / FEE TRADE ZONE - A port designated by the Government of a country for duty-free entry of any non-prohibited goods. Merchandise may be stored, displayed, used for manufacturing, etc. within the zone and re-exported without duties being paid. Duties are imposed on the merchandise (or items manufactured from the merchandise) only when the goods pass from the foreign trade zone into an area of the country subject to the Customs authority.

FREIGHTER - Also called a cargo liner; a ship designed to carry general cargo. It sails according to a schedule between different ports. Occasionally a small number of passengers can also be accommodated.

FREIGHT FORWARDER - A person or persons who represents the cargo owner and who arranges shipments for that owner.

FREIGHT RATE - The charge made for the transportation of freight.

FREIGHT TONNE - The greater weight or measurement of goods where 1 tonne is equal to 1,000kg or 1 cubic meter.

FULL CELLULAR SHIP - A ship fitted for container carriage in all available space. The ship is fitted with vertical cells for container placement both below and above deck. No provisions are available for cargo other than containers.

GANGWAY - a narrow portable platform used as a passage, by persons entering or leaving a vessel moored alongside a pier or quay.

GAS TANKER - Specially designed for the transport of condensed (liquefied) gases. The most important gases are: ammonia, ethylene, LNG (Liquefied Natural Gas), which consists mainly of methane, and is cooled to a temperature of –262°F (-163°C), and LPG (Liquefied Petroleum Gas) such as butane and propane.

GATF - General Agreements on Tariffs and Trade.

GATT - General Agreement on Tariffs & Trade, an international agreement embodying a code of practice for fair trading in international commerce. Is headquartered in Geneva.

GENERAL CARGO - A non-bulk oil cargo composed of miscellaneous goods.

GROSS TONNAGE and NET TONNAGE (GT and NT) - Gross tonnage is the basis on which manning rules and safety regulations are applied, and registration fees are reckoned. Port fees are also often reckoned on the basis of GT and NT. GT and NT are defined according to formulas, which take account, among other things, of the volume of the vessel's enclosed spaces (GT) and the volume of its holds (NT).

GROSS REGISTERED TONS - A common measurement of the internal volume of a ship with certain spaces excluded.

HAGUE RULES - Code of minimum conditions for the carriage of cargo under a bill of lading

HANDYSIZE BULK CARRIER - Bulk carrier between 10,000 and 40,000 DWT.

HARMONIZED COMMODITY DESCRIPTION AND CODING SYSTEM - A multi-purpose international goods-classification for manufacturers. Transporters, exporters, importers, customs officials, statisticians, and others in classifying goods moving in international trade under a single commodity code. Developed under the auspices of the Customs Cooperation’s Council (CCC), an international customs organization in Brussels, this code is a hierarchically structured product nomenclature containing approximately 5,000 headings and subheadings describing the articles moving in international trade. It is organized into 99 chapters arranged in 22 sections. Sections encompass an industry

HARBOUR DUES - Various local charges levied against all seagoing vessels entering a harbor, to cover maintenance of channel depths, buoys, lights, etc. Not all harbors raise this charge.

HARBOUR MASTER (Port Captain) - A person usually having the experience of a certificated master mariner and having a good knowledge of the characteristics of the port and its whole area. He administers the entire shipping movements that take place in and within reach of his port.

HARD AGROUND - A vessel which has gone aground and is incapable of refloating under her own power.

HATCH - An opening, generally rectangular, in a ship's deck providing access into the compartment below.

HAWSER - Large strong rope or cable used for towing purposes and for securing or mooring ships.

HAZARDOUS MATERIALS (Hazmat) - The U.S. Government’s official term for Dangerous Goods. Items of freight that are inherently harmful and classified under Title 49, Code of Federal Regulations (CFR). Hazardous Materials may only be transported under certain conditions relative to packaging, quantity carried, airplane type, location on board the airplane, etc., and in conformance with applicable rules. Also see Dangerous Goods.

HAZARDOUS CARGO - All substances of an inflammable, toxic or otherwise dangerous nature.

HEAVY LIFT SHIP - Designed to transport unusually heavy or bulky cargoes, including other ships. It is equipped with jumbo derricks capable of lifting over 200 tons. Also known as a belship.

HELM - A tiller or a wheel generally installed on the bridge or wheelhouse of a ship to turn the rudder during maneuvering and navigation. It is in fact the steering wheel of the ship.

HOISTING ROPE - Special flexible wire or nylon rope for lifting purposes.

HOLD - A general name for the large compartments below the main deck designated for stowage of general cargo.

IAPH - International Association of Ports & Harbors

IHMA - International Harbor Masters Association

ILO - International Labour Organization; Based in Geneva, it is one of the oldest components of the UN system of specialized agencies and has been involved over the years in appraising and seeking to improve and regulate conditions for seafarers. In its unusual tripartite way, involving official representatives of government, employer and employee interests, its joint Maritime Commission have been responsible for regulations involving the employment of foreign seafarers with regards to the application of minimum labor standards, on crew accommodation, accident prevention, medical examination and medical care, food and catering and competency of ships' officers.

IMDG - International Maritime Dangerous Goods Code.

Class 1: Explosives and objects containing explosives

Class 2: Gases

Class 3: Flammable liquids

Class 4: Flammable solids, materials that self-ignite, materials that develop flammable gases upon contact with water

Class 5: Oxidizers and organic peroxides

Class 6: Poisonous materials and contagious materials

Class 7: Radioactive

Class 8: Caustics

Class 9: Various dangerous goods

IMF - International Monetary Fund.

IMO - International Maritime Organization: Formerly known as the Inter-Governmental Maritime Consultative Organization (IMCO), was established in 1958 through the United Nations to coordinate international maritime safety and related practices.

INERT GAS SYSTEM - A system of preventing any explosion in the cargo tanks of a tanker by replacing the cargo, as it is pumped out, by an inert gas, often the exhaust of the ship's engine. Gas freeing must be carried out subsequently if workers have to enter the empty tanks.

INCOTERMS - A set of uniform rules codifying he interpretation of trade terms defining the rights and obligations of both buyer and seller in an international transaction. The terms recognized by Incoterms 1990 are: EXW - ex works (named place); FCA - Free Carrier (named place); FAS - Free alongside Ship (named port of shipment); FOB - Free on Board (named port of shipment); CFR - Cost & Freight (named port of destination); CIF - Cost, Insurance and Freight (named port of destination); CPT - Carriage Paid To (named point of destination); CIP - Carriage & Insurance Paid To (named point of destination); DAF - Delivered at Frontier (named point); DES - Delivered ex Ship (named port of destination); DEQ - Delivered ex Quay (duty paid) (named port of destination); DDU - Delivered Duty Unpaid (named point); DDP - Delivered Duty Paid (named point).

INMARSAT - International Maritime Satellit System.

INSULATED CONTAINER - A container insulated on the walls, roof, floor and doors, to reduce the effect of external temperatures on the cargo.

INTEGRATED TUG BARGE (ITB) - A large barge of integrated from the rear on to the bow of a tug purposely constructed to push the barge.

INTERCOASTAL - Water service between two coasts; usually refers to water service between a point on the Atlantic and Pacific Coasts.

Intermodal Used to denote movements of cargo or container between motor, rail or water carriers.

IGLOO- A structural or non-structural container contoured to the dimensions of a standard-body freighter main deck.

ISPS - International Ship and Port Facility Security Code.

INTERMODAL CONTAINER - A structural container designed for carriage on airplanes, trucks, rail cars, and ocean vessels and equipped with corner fittings for restraint on a truck chassis and/or for lifting by crane or other loading mechanism.

INTERMODAL TRANSPORT - Moving ocean freight containers by various transportation modes. The fact that the containers are of the same size and have common handling characteristics permits them to be transferred from truck to railroad to air carrier to ocean carrier.

INTERNATION CODE OF SIGNALS - Worldwide system of communication using flags or, more recently, radio.

INTERNATIONAL LOAD LINE CERTIFICATE - A certificate which gives details of a ship's freeboard and states that the ship has been surveyed and the appropriate load lines marked on her sides. The certificate is issued by a classification society or coastal authority such as a coast guard.

ITF - International Transport Workers Federation (Trade Unions)

JACKUP - A deck with legs that can be jacked up or down. During operations, the legs rest on the seabed. When the rig is moved, the legs are retracted, leaving the rig floating. A jack up has Normally no propulsion machinery of its own.

KEEL - The lowest longitudinal timber of a vessel, on which framework of the whole is built up; combination of iron plates serving same purpose in iron vessel.

KNOT - Unit of speed in navigation, which is the rate of nautical mile (1,852 meters or 6,080 feet) per hour. i.e. 1.852 km/h.

LAID-UP - Ships not in active service; a ship which is out of commission for fitting out, awaiting better markets, needing work for classification, etc.

LASH - Lighter aboard ship: A barge carrier designed to act as a shuttle between ports, taking on and discharging barges.

LASH SHIPS - LASH stand for Lighter Aboard Ship. It is a specialized container ship carrying very large floating containers, or 'lighters'. The ship carries its own heavy-duty crane for loading and discharging the lighters over the stern. The lighters each have a capacity of about 400 tons and are stowed in the holds and on deck. While, the ship is at sea with one set of lighters, further sets can be made ready. Loading and discharge are rapid at about 15 minutes per lighter, no port or dock facilities are needed, and the lighters can be grouped for pushing by towboats along inland waterways.

LAY-BY - ships that are laid up usually waiting for cargo or a charter, often outside a port.

LAY-UP - Temporary cessation of trading of a ship by a ship-owner during a period when there is a surplus of ships in relation to the level of available cargoes. This surplus, known as over-tonnaging, has the effect of depressing freight rates to the extent that some ship-owners no longer find it economical to trade their ship, preferring to lay them up until there is a reversal in the trend.

LCL - LESS THAN CONTAINER LOAD - A consignment of cargo that is insufficient to fill a shipping container. It is grouped with other consignments for the same destination in a container at a container freight station.

LIGHT DISPLACEMENT TONNAGE - The weight of a ship's hull, machinery, equipment and spares. This is often the basis on which ships are paid for when purchased for scrapping. The difference between the loaded displacement and light displacement is the ship's deadweight.

LIGHTER - General name for a broad, flat-bottomed boat used in transporting cargo between a vessel and the shore. The distinction between a lighter and a barge is more in the manner of use than in equipment. The term 'lighter' refers to a short haul, generally in connection with loading and unloading operations of vessels in harbor, while the term 'barge' is more often used when the cargo is being carried to its destination over a long distance.

LIGHTER ABOARD SHIP - An ocean ship that carries barges. These barges are loaded with cargo, often at a variety of locations, towed to the ocean ship, sometimes referred to as the mother ship, and lifted or, in some cases, floated on board. After the ocean crossing, the barges are off-loaded and towed to their various destinations. The ocean ship then receives a further set of barges, which have been assembled in readiness. This concept was designed to eliminate the need for specialized port equipment and to avoid transshipment with its consequent extra cost.

LIGHTERAGE - Charge for conveying cargo by lighters or barges.

LIEN - Retention of property until outstanding dept is paid.

LINER - A cargo or passenger-carrying ship that is operated between scheduled, advertised ports of loading and discharge on a regular basis.

LINER SHIP OPERATORS - Operators who trade ships regularly from one port to another.

LLOYD'S REGISTER OF SHIPPING - Well-known British classification society.

LNG CARRIER - Liquefied natural gas carrier, perhaps the most sophisticated of all commercial ships. The cargo tanks are made of a special aluminum alloy and are heavily insulated to carry natural gas in its liquid state at a temperature of -2,850F. The LNG ship costs about twice as much as an oil tanker of the same size.

LOAD FACTOR - Percentage of cargo or passengers carried e.g. 4000 tons carried on a vessel of 10,000t capacity has a load factor of 40%.

LOAD LINE - The line on a vessel indicating the maximum depth to which that vessel can sink when loaded with cargo. Also known as Marks.

LO-LO - Lift on, lift off; a container ship in which containers are lifted on or off by crane as opposed to Ro-Ro.

LONG TON (LT) - 1,016.05kg or 2,240 pounds.

LOOKOUT - A member of the crew stationed on the forecastle, bridge, or in the case of sailing vessels, the crow's nest at the top of one of the main masts. His duty it is to watch for any dangerous objects or for any other vessels approaching.

MAIN DECK - The main continuous deck of a ship running from fore to aft; the principle deck; the deck from which the freeboard is determined.

MANIFEST - A document containing a full list of the ship's cargo, extracted from the bills of lading.

MANNING SCALES - The minimum number of officers and crewmembers that can be engaged on a ship to be considered as sufficient hands with practical ability to meet every possible eventuality at sea.

MARKS AND NO'S - Marks & Numbers placed on packages for export for identification purposes; generally a triangle, square, circle, diamond, or cross with letters and/or numbers and port discharge.

MARPOL - The International Convention for the Prevention of Pollution from

Ships, s modified by the several Protocols. Part of the IMO.

MASTHEAD LIGHT - A white light positioned over the fore and aft centerline of the vessel.

MITB - Maritime Industry Training Board.

MLA - Maritime Law Association.

MOORING LINE - A cable or line used to tie up a ship.

M/T - Metric tonnes (2,250 lbs).

MULTIPURPOSE SHIP - Any ship capable of carrying different types of cargo that require different methods of handling. There are several types of ships falling into this category, for example, ships that can carry roll on/roll off cargo together with containers. Ships that are designed to carry both dry, loose cargo and cargo in containers.

Navis SPARCS (Synchronous Planning and Real Time Control System), a graphical planning software that guides proper segregation and stacking of containers, vessels berthing, loading and unloading, and equipment control.

NEAP TIDE - An unusually low tide that happens around the time of the first or fourth quarters of the moon.

NEOBULK - Shipments consisting entirely of units of a single commodity, such as

cars, lumber, or scrap metal.

NET CAPACITY - The number of tons of cargo that a vessel can carry when loaded in salt water to her summer freeboard marks. Also called cargo carrying capacity, cargo deadweight, useful deadweight.

NET TONNAGE - Equals gross tonnage minus deductions for space occupied by crew accommodations, machinery, navigation equipment and bunkers. It represents space available for cargo (and passengers). Canal tolls are based on net (registered) tonnage.

NRT - Net registered tons. This tonnage is frequently shown on ship registration papers; it represents the volumetric area available for cargo at 100 cubic feet = 1 ton. It often is used by port and canal authorities as a basis for charges.

NVO - Non-vessel-operating common carrier, a ships agent, conducts business for

the ship but does not operate the vessel.

OBO SHIP - A multipurpose ship that can carry ore, heavy dry bulk goods and oil. Although more expensive to build, they ultimately are more economical because they can make return journeys with cargo instead of empty.

OCEAN WAYBILL - A document, issued by a shipping line to a shipper which serves as a receipt for the goods and evidence of the contract carriage.

OPERATOR - The holder of a freight contract with a cargo shipper.

ORE CARRIER - A large ship designed to be used for the carriage of ore. Because of the high density of ore, ore carriers have a relatively high centre of gravity to prevent them from rolling heavily at sea with possible stress to the hull.

PANAMAX - A vessel designed to be just small enough to transit the Panama Canal

PIER - The structure to which a vessel is secured for the purpose of loading and unloading cargo.

PILOT - A person who is qualified to assist the master of a ship to navigate when entering or leaving a port. In most ports pilotage is compulsory.

PILOT HOUSE - The enclosed space on the navigating bridge from which a ship is controlled when under way.

PLIMSOLL LINE - A series of lines on the side of a ship showing the sea level when the ship is fully loaded. A different line is used depending on the current season and the amount of salt in the water. Also called the load line.

QUARANTINE - The period during which a vessel is detained in isolation until free from any contagious disease among the passengers or crew. The word is now applied to the sanitary

regulations which are the modern substitute for quarantine. During the quarantine period, the Q flag is hoisted.

QUARANTINE BUOY - One of the yellow buoys at the entrance of a harbor indicating the place where vessel must anchor for the exercise of quarantine regulations.

QUARANTINE DECLARATION - A document signed by the captain and the ship's doctor before the port health officer when a ship arrives at the quarantine station. It gives the name of the ship, tonnage, number of crew, first port of voyage and date of sailing, intermediate ports called at, number of passengers for the port at which the vessel is arriving, number of transit passengers, cases of infectious diseases during voyage, deaths, nature of cargo, name of agents. The port health officer then proceeds with the medical inspection of passengers and crew. Also called entry declaration.

QUARANTINE STATION - A medical control center located in an isolated spot ashore where patients with contagious diseases from vessel in quarantine are taken. It is also used for passengers and crews of vessel arriving from suspected ports while fumigation or any other disinfection is carried out on board ship.

RAIL ONBOARD B/L This is unique practice in NAT having the similar function as onboard vessel B/L. In the event of multimodal B/L is prepared, shipper can request a clause on the B/L to satisfy their commercial transaction as LADEN ONBOARD RAIL MMDDYY. The date on the B/L is on which containers are loaded onboard rail flat car. However, the word RAIL is not necessary.

RECEPT FOR SHIPMENT B/L A term used in contradistinction to shipped bill of lading, which is the standard document. Some bankers object to such bill of lading on the ground that the security they offer is imperfect. This kind of bill of lading is normally issued to acknowledge receipt of shipment before cargo loading or before official original bill of lading is issued. Nowadays, not many shippers ask for this kind of bill of lading.

REEFER - Refrigerator ship; a vessel designed to carry goods requiring refrigeration, such as meat and fruit. A reefer ship has insulated holds into which cold air is passed at the temperature appropriate to the goods being carried.

REEFER BOX - An insulated shipping container designed to carry cargoes requiring temperature control. It is fitted with a refrigeration unit, which is connected to the ship's electrical power supply.

ROLLING CARGO - Cargo which is on wheels, such as truck or trailers, and which can be driven or towed on to a ship.

RO/RO SHIP - Freight ship or ferry with facilities for vehicles to drive on and off (roll-on roll-off); a system of loading and discharging a ship whereby the cargo is driven on and off on ramps. Equipped with large openings at bow and stern and sometimes also on the side, providing easy access. Fully loaded trucks or trailers carrying containers are accommodated on the deck.

SEABEE - Sea-barge, a barge carrier design similar to "LASH" but which uses rollers to move the barges aboard the ship; the self-propelled loaded barges are themselves loaded on board as cargo and are considerably larger than those loaded on LASH ships.

SEAL (Container) - Metal strip and lead fastener used for locking freight car or truck doors. Seals are numbered for record purposes.

SEAL RECORD - A record of the number, condition and marks of identification on seals made at various times and places, referring to the movement of the container between origin and destination.

STEVEDORE - Terminal operator who is designated to facilitate the operation of loading and discharging vessels and various terminal activities.

STORE- DOOR DELIVERY (STOR/DOR) Delivery of goods to consignee's place of business or warehouse by motor vehicle. Refers to a complete package of delivery services performed by a carrier from origin to final consumption point, whether that be a retail, wholesale or other final distribution facility. Abbreviated in CCMS as SDD.

SEAWORTHINESS CERTIFICATE - A certificate issued by a classification society surveyor to allow a vessel to proceed after she has met with a mishap that may have affected its seaworthiness. It is frequently issued to enable a vessel to proceed, after temporary repairs have been effected, to another port where permanent repairs are then carried out.

SELF-GEARED SHIP - Any ship with its own gear, or crane/s for loading and discharging shipping cargo including containers, thus enabling the ship to serve ports which do not have suitable lifting equipment.

SELF-TRIMMING SHIP - A ship whose holds re shaped in such a way that the cargo

levels itself.

SEMISUBMERSIBLE - A ship able to submerge part of itself to load or discharge cargo that can be floated on or off. Usually semi submersible ships are heavy-duty vessels.

SHIP'S ARTICLES - A written agreement between the master of a ship and the crew concerning their employment. It includes rates of pay and capacity of each crewman, the date of commencement of the voyage and its duration.

SHIP'S STABILITY - The seaworthiness of a ship regarding the centrifugal force which enables her to remain upright.

SHIP'S AGENT - A person or firm who transact all the ship's business in a port on behalf of ship owners or charterers.

SHIPPER - Individuals or businesses who tender goods or cargo for transportation - usually the cargo owners or their representatives and not to be confused with the party issuing the bills of lading or the ship's operator who is the carrier.

SHORT TON - 2,000 pounds.

SPRING TIDE - An unusually high tide that happens around the time of a new or full moon.

STERNWAY - The reverse movement of a vessel.

STOWAGE - The placing of goods in a ship in such a way as to ensure the safety and stability of the ship not only on a sea or ocean passage but also while in port when parts of the cargo have been loaded or discharged.

STOWAGE FACTOR - Cubic space (measurement tons occupied by one tonne of cargo).

STUFFING (or STRIPPING) - the act of packing or unpacking a container.

TAIL SHAFT - The extreme section at the aft end of a ship's propeller shaft.

TANKER - A tanker is a bulk carrier designed to transport liquid cargo, most often petroleum products. Oil tankers vary in size from small coastal vessels of 1,000 tons deadweight, through medium-sized ship of 60,000 tons, to the giant VLCCs (very large crude carriers). The largest tanker currently afloat is the Norwegian ship Jahre Viking of 564,650DWT. The ship is 458m in length and has a beam of 68,9m with a draught of 24,6m.

TARE WEIGHT - The actual weight of a container or pallet when empty, including all liners and/or fittings.

TARIFF - A document setting forth applicable rules, rates, and charges for the movement of goods. A tariff sets forth a contract of carriage for the shipper, the consignee, and the carrier. Tariffs are sometimes published by the carriers themselves and by a variety of publishing agencies, such as the Airline Tariff Publishing Company (ATPCO), The Air

TERMINAL - the business unit in ports where specific cargo, i.e. containers are handled.

TEU - Twenty Foot Equivalent Unit (containers): A measurement of cargo-carrying capacity on a containership, referring to a common container size of 20 ft in length. A 40ft long container is measured as being 2TEU.

THC - Terminal-handling charge, raised at port terminals for the handling of cargo.

TON MILE - A measurement used in the economics of transportation to designate one ton being moved one mile. This is useful to the shipper because it includes the distance to move a commodity in the calculation.

TONNAGE - Deadweight, gross, net, displacement.

TONNAGE - A quantity of cargo normally expressed as a number of tons.

TRIM - The relationship between a ship's draughts forward and aft.

TUG - A small vessel designed to tow or push large ships or barges. Tugs have powerful diesel engines and are essential for manoeuvring large ships around the port. Pusher tugs are also used to push enormous trains of barges on the rivers and inland waterways of the U.S. Ocean-going salvage tugs provide assistance to ships in distress and engage in such work as towing drilling rigs and oil production platforms.

ULCC - Ultra Large Crude Carriers larger than 300,000DWT.

VLCC - Very Large Crude Carriers: Tankers between 200,000 and 300,000DWT.

WAYBILL - A non-negotiable document that acts as a receipt for the goods and evidence of the contract of carriage.

Abbreviations and Acronyms

ACI Air Cargo, Inc
ACL Allowable Cabin Load
ACR Air Cargo Resource, Inc.
AEV Articles of Extraordinary Value
AMF Airport Mail Facility
AOG Aircraft on Ground
ATA Air Transport Association of America
ATPCO Airline Tariff Publishing Company
AWB Air Waybill
CAB Civil Aeronautics Board (Defunct)
CIF Cost Insurance and Freight
COD Collect on Delivery
COMAT Company-Owned Material
CWT Hundredweight
DGI Dangerous Goods International
DOT Department of Transportation
EDI Electronic Data Interchange
ETA Estimated Time of Arrival
FAA Federal Aviation Administration
FAS Free Along Side
FTK Freight Tonne Kilometer
FOB Free on Board
GCR General commodity Rates
GMT Greenwich Mean Time
HAZMAT Hazardous Materials
IATA International Air Transport Association
ICAO International Civil Aviation Organization
ISO International Organization for Standardization
JIT Just in Time
KG Kilogram
LC Letter of Credit
LTL Less Than Truck Load
NES Not elsewhere Specified
NTSB National Transportation Safety board
OAG Official Airline Guide
ORM Other Regulated Material

PAX	Passenger(s)
PU&D	Pick-up and delivery
RFS	Road Feeder Service
SCR	Specific Commodity Rate
SED	Shipper's Export Declaration
TACM	Transit Air Cargo Manifest
TACT	The Air Cargo Tariff
ULD	Unit Load Device
UTC	Coordinated Universal Time
WAD	World Aviation Directory