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Sustainable Human Resource Development in logistics services for ASEAN Member States

The Training Material on “Cargo Packaging and unitization” has been produced under Project Sustainable Human Resource Development in Logistic Services for ASEAN Member States with the support from Japan-ASEAN Integration Fund (JAIF). Copyright Association of Southeast Asian Nations (ASEAN) 2014. All rights reserved.



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Chapter 2 – Cargo Vessel

Objectives & Introduction

2.1 LASH – Lighter Abroad Ship

2.2 RORO – Roll On / Roll Off

2.3 Barges and container vessels



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Objectives

Students are to understand the availability of different types and functions of vessels available.

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Introduction

Bulk Cargo Vessel or Bulk Carrier are ships specially designed to transport unpackaged bulk cargo, such as grains, coal, ore, and cement in its cargo holds. Since the first specialized bulk carrier was built in 1852, economic forces have fuelled the development of these ships, causing them to grow in size and sophistication. Today's bulkers are specially designed to maximize capacity, safety, efficiency, and to be able to withstand the rigours of their work. A bulk carrier's crew participates in the loading and unloading of cargo, navigating the ship, and keeping its machinery and equipment properly maintained. Loading and unloading the cargo is difficult, dangerous, and can take up to 120 hours on larger ships. Crews can range in size from three people on the smallest ships to over 30 on the largest. Bulk cargo can be very dense, corrosive, or abrasive. This can present safety problems: cargo movements, spontaneous combustion, and cargo saturation can threaten a ship. The use of ships that are old and have corrosion problems has been linked to a spate of bulker sinking in the 1990s, as have the bulker's large hatchways, important for efficient cargo handling. New international regulations have since been introduced to improve ship design and inspection, and to streamline the process of abandoning ship.

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2.1 LASH – Lighter Abroad Ship

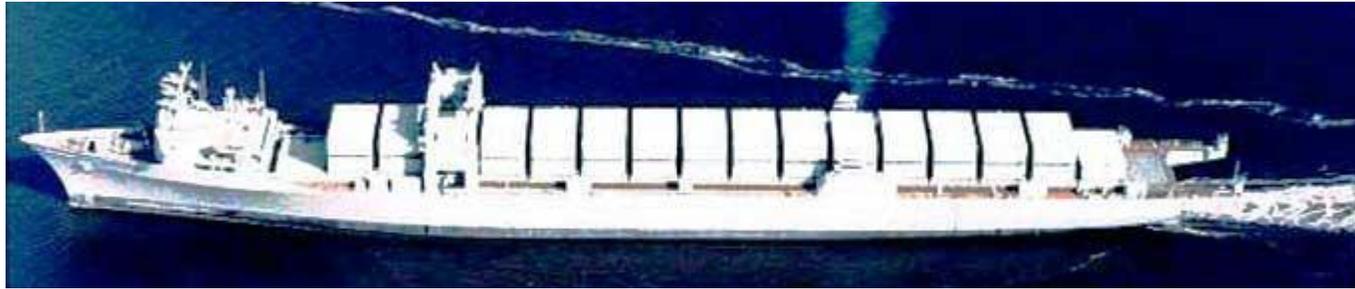
The lighter aboard ship (LASH) system refers to the practice of loading barges or lighters aboard a larger vessel for transportation. It was developed in response to a need to transport lighters, a type of unpowered barge, between inland waterways separated by open seas. Lighters are typically towed or pushed around harbours, canals or rivers and cannot be relocated under their own power. The carrier ships are known variously as LASH carriers, barge carriers, kangaroo ships or lighter transport ships. The LASH system was developed as an alternative and supplement to the developing container system. The lighters, which may be characterized as floating cargo containers, served dual purposes: transportation over water, and the establishment of a modular, standardized shape for loading and unloading cargo. The lighters, also known as *swimming normed cargo containers*, are loaded onto a LASH carrier at the port of embarkation and unloaded from the ship at the port of destination.



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SS Cape Farewell - Lighter Aboard Ship



SS Cape Fear -- Lighter Aboard Ship - showing lifting of "lighter"

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2.2 RORO – Roll On Roll Off

Roll-on/roll-off or more commonly called RORO ships are vessels designed to carry wheeled cargo, such as automobiles, trucks, semi-trailer trucks, and railroad cars, that are driven on and off the ship on their own wheels. This is in contrast to Lift-on/Lift-off (LoLo) vessels, which use a crane to load and unload cargo.

RORO vessels have built-in ramps that allow the cargo to be efficiently rolled on and off the vessel when in port. While smaller ferries that operate across rivers and other short distances often have built-in ramps, the term RORO is generally reserved for larger oceangoing vessels. The ramps and doors may be [stern](#)-only, or [bow](#) and stern for quick loading. Types of RORO vessels include ferries, cruise ferries, cargo ships and barges. New automobiles that are transported by ship are often moved on a large type of RORO called a pure car carrier (PCC) or pure car/truck carrier (PCTC). In the shipping industry, cargo is normally measured by the metric tonne, but RORO cargo is typically measured in *lanes in metres* (LIMs). This is calculated by multiplying the cargo length in metres by the number of decks and by its width in lanes (lane width differs from vessel to vessel, and there are several industry standards).



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RORO Vessel



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2.3 Barges and container vessels

A barge is a flat-bottomed boat, built mainly for river and canal to transport heavy goods. Some barges are not self-propelled and need to be towed or pushed by towboats. Container ships are cargo ships that carry all of their load in truck-size intermodal containers, in a technique called containerization. They are a common means of commercial intermodal or multimodal freight transport and now carry most seagoing non-bulk cargo. Container ship capacity is measured in twenty-foot equivalent units (TEU).

Typical loads are a mix of 20-foot and 40-foot (2-TEU) ISO-standard containers, with the latter predominant. Container vessels eliminate the individual hatches, holds and dividers of the traditional general cargo vessels. The hull of a typical container ship is a huge warehouse divided into cells by vertical guide rails. These cells are designed to hold cargo in pre-packed units – containers.

Shipping containers are usually made of steel, but other materials like aluminium, fiberglass or plywood are also used. They are designed to be entirely transferred to and from trains, trucks or trailers. There are several types of containers and they are categorized according to their size and functions.



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