

# LIGHTHOUSE

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**R.L. INSTITUTE OF NAUTICAL SCIENCES**

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## Naval Dome: Shipping Needs to be on Red Alert for Cyber Attack

Vigneshwar - B.Tech.III

As the maritime sector is being targeted by cyber criminals, the shipping industry should be on the highest alert to prevent the cyber attack, Itai Sela, CEO of cyber security specialist Naval Dome, said.

Speaking at the Singapore Maritime Technology Conference (SMTC) 2019, organized by the Maritime and Port Authority of Singapore (MPA), Sela warned:

“Somebody, somewhere is targeting the maritime sector. The shipping industry should be on Red Alert.”

Sela’s warning follows widespread concern that the maritime industry remains vulnerable and is not doing enough to protect itself.

During a round table discussion in which several companies informed the Greek shipping community of the importance of cyber security, one analyst said that while the industry is “concerned about the cyber risk it struggles to understand where and how best to manage it”.

As stressed by Naval Dome CEO, the industry is not prepared for cyber attacks. Taking into account that shipping is a USD 4 trillion global industry transporting 80% of the world’s energy, commodities and goods, any activity that disrupts global trade would have far-reaching consequences.



Image Courtesy: Pixabay under CC0 Creative Commons license

“It is easy to understand why shipping is now in the cross-hair of the cyber-criminal or activist. But the maritime industry still believes it is enough to have a Level 1 solution to protect against a Level 4 threat,” Sela commented.

Referring to the global certification standard IEC 62443, which has been adopted by several certification bodies, Sela explained the four levels of security used for safeguarding against a cyber-attack.

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# ISO Audit in Progress at R L Institute of Nautical Sciences



Mr. Nambi subramanian, Team Leader ISO 9001: 2015 (facing centre) with Principal Mr. Bhaskar Agnihotri and Mr. M.subramanian, Advisor-Technical. Also seen are members of faculty and staff of RLINS.



During ISO 9001: 2015 Audit the Team Leader Mr. Nambi Subramanian having a pep talk with our Principal Mr. Bhaskar Agnihotri and Mr. M.Subramanian, Advisor-Technical in the Principal's cabin.

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# Naval Dome: Shipping Needs to ...

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“A Level 4 attack is extremely sophisticated and intended to cause the most amount of disruption for either political, social or financial gain. It is in the Level 4 type attack, criminals are using to penetrate the shipping industry,” Sela said, recalling an incident in which the navigational equipment aboard a fleet of 15 tankers was simultaneously hacked.

As explained, the easiest way for hackers to penetrate ship systems is to attack systems at the ship manager or original equipment manufacturer’s (OEM) head office.

“All a hacker has to do is infiltrate these systems and wait until someone sends an infected email to someone onboard ship – the attack is delivered. It spreads. It’s autonomous.”

The current regulations consider improving interactions between the operator and machine as the optimum way of combating maritime cyber crime. However, Naval Dome believes the best solution is based on technology that removes the human element altogether.

In his presentation to the Singapore maritime community, Sela suggested that a ship can be used as a very effective weapon to “create chaos and destruction” at the port.

“A ship whose systems are under the control of the cyber-criminal could result in pollution, cause collisions or groundings, or be used as an incendiary device. The result could be catastrophic if a vessel is not secured to the highest level.”

Sela also said that a country like Singapore must have the ability to monitor all the ships that enter its waters in order to verify whether it’s infected or cyber clean.

“I strongly recommend that all port authorities have the ability to control the cyber threat that each and every vessel entering their waters brings with them. This will protect assets and avoid potential disaster,” he concluded.

courtesy: world maritime news.com

## Different Types of Containers and its Uses

Mathan Jesurayappan - ETO

**A container is a very large metal or wooden box used for transporting goods so that they can be loaded easily onto ships and lorries**

**16 Types of Container Units and Designs for Shipping Cargo are discussed in detail.**

Container units form the most integral part of the entire shipping industry, trade, and transport. These shipping containers are the structures that store various kinds of products that need to be shipped from one part of the world to another. Moving containers protect contents on the long journeys they make and ensure they make it back to you in one piece.

As such, depending on the type of products to be shipped or the special services needed from them, container units may vary in dimension, structure, materials, construction etc. Various types of shipping containers are being used today to meet requirements of all kinds of cargo shipping. Some of the most common types of shipping containers in use today are mentioned below.

### 1. Dry storage container

The most commonly used shipping containers; they come in various dimensions standardized by ISO. They are used for shipping of dry materials and come in size of 20ft, 40 ft and 10ft.



### 2. Flat rack container

With collapsible sides, these are like simple storage shipping containers where the sides can be folded so as to make a flat rack for shipping of wide variety of goods.





### 3. Open top container

With a convertible top that can be completely removed to make an open top so that materials of any height can be shipped easily.

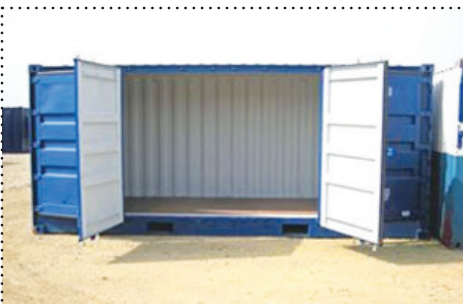


### 4. Tunnel container

Container storage units provided with doors on both ends of the container; they are extremely helpful in quick loading and unloading of materials.



### 5. Open side storage container



These storage units are provided with doors that can change into completely open sides providing a much wider room for loading of materials.

### 6. Double doors container



They are the kind of storage units that are provided with double doors, making a wider room for loading and unloading of materials. Construction materials such as steel, iron etc in standardized sizes of 20ft and 40ft. will be transported through these containers.

### 7. Refrigerated ISO containers

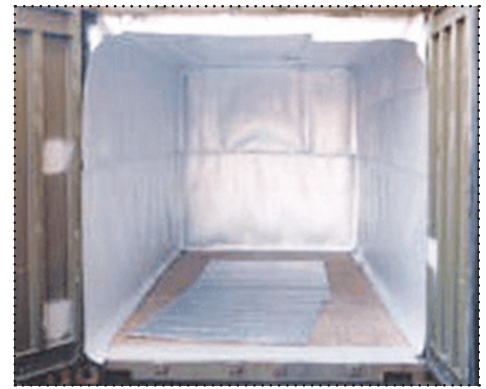


These are temperature regulated shipping containers that always have a carefully controlled low temperature. They are exclusively used for shipment of perishable substances like fruits and vegetables over long distances.

### 8. Insulated or thermal containers

These are the shipping storage containers that come with a regulated temperature control allowing them to maintain a higher temperature.

The stored material will have a long life without being damaged by constant exposure to high



temperature. They are most suitable for long distance transportation of products.

### 9. Tanks



Container storage units used mostly for transportation of liquid materials, they are used by a huge proportion of entire shipping industry. They are mostly made of strong steel or other anti corrosive materials providing them with long life and protection to the materials.

### 10. Cargo storage roll container

A foldable container, this is one of the specialized container units made for purpose of transporting sets or stacks of materials. They are made of thick and strong wire mesh along with rollers that allow their easy movement. Availability in a range of colored wire meshes make these shipping container units a little more cheerful.







### 11. Half height containers



Another kind of shipping containers includes half height containers. Made mostly of steel, these containers are half the height of full sized containers. Used especially for goods like coal, stones etc which need easy loading and unloading.

### 12. Car carriers



Car carriers are container storage units made especially for shipment of cars over long distances. They come with collapsible sides that help a car fit snugly inside the containers

without the risk of being damaged or moving from the spot.

### 13. Intermediate bulk shift containers



These are specialized storage shipping containers made solely for the purpose of intermediate shipping of goods. They are designed to handle large amounts of materials and made for the purpose of shipping materials to a destination where they can be further packed and sent off to final spot.

### 14. Drums



As the name suggests, circular shipping containers, made from a choice of materials like steel, light weight metals, fiber, hard plastic

etc. They are most suitable for bulk transport of liquid materials. They are smaller in size but due to their shape, may need extra space.

### 15. Special purpose containers



Not the ordinary containers, these are the container units, which are custom made for specialized purposes. Mostly, they are used for high profile services like shipment of weapons and arson. As such, their construction and material composition depend on the special purpose they need to cater to. But in most cases, security remains the top priority.

### 16. Swap bodies

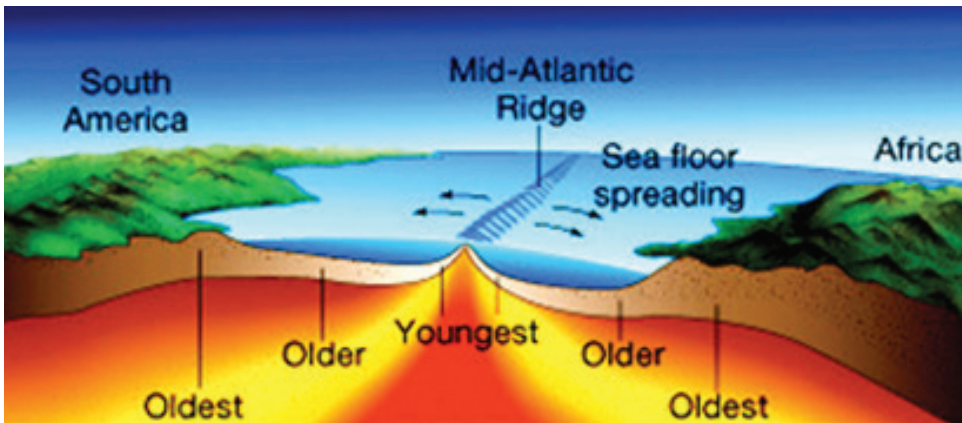


They are a special kind of containers used mostly in Europe. Not made according to the ISO standards, they are not standardized shipping container units but extremely useful all the same. They are provided with a strong bottom and a convertible top making them suitable for shipping of many types of products.

**Coclusion:** Today, about 90% of non-bulk cargo worldwide is transported by container ships, and the largest modern container ships can carry over 21,000 TEU (e.g., OOCL Hong Kong). Container ships now rival crude oil tankers and bulk carriers as the largest commercial seaborne vessels.

# Know Your Oceans - The Sea Floor Spreading

Meenakshi Sundaram B - OFFICE SUPERINTENDENT / FACULTY



Seafloor spreading is a process that occurs at mid-ocean ridges, where new oceanic crust is formed through volcanic activity and then gradually moves away from the ridge. Seafloor spreading helps explain continental drift in the theory of plate tectonics. The idea that the seafloor itself moves (and carries the continents with it) as it expands from a central axis was proposed by Harry Hess from Princeton University in the 1960s.

This phenomenon is known to be caused by convection currents in the plastic, very weak upper mantle, or asthenosphere. Sea floor spreading starts as a rift in a continental land mass, similar to the Red Sea-East Africa Rift. The process starts with heating at the base of the continental crust which causes it to become more plastic and less dense. Because less dense objects rise in relation to denser objects, the area being heated becomes a broad dome.

As the crust bows upward, fractures occur that gradually grow into rifts. The typical rift system consists of three rift arms at approximately 120 degree angles.

These areas are named triple junctions found in several places across the world.

The separated margins of the continents evolve to form passive margins. If spreading continues, two of the rift arms will open while the third arm stops opening and becomes a 'failed rift'. As the two active rifts continue to open, eventually the continental crust is attenuated as far as it will stretch. At this point basaltic oceanic crust begins to form between the separating continental fragments. When one of the rifts opens into the existing ocean, the rift system is flooded with seawater and becomes a new sea. The Red Sea is an example of a new arm of the sea.

The new oceanic crust is quite hot relative to old oceanic crust. The destruction of oceanic crust occurs at subduction zones where oceanic crust is forced under either continental crust or oceanic crust. Today, the Atlantic basin is actively spreading at the Mid-Atlantic Ridge. Only a small portion of the oceanic crust produced in the Atlantic is subducted. However, the plates making up the Pacific Ocean are

experiencing subduction which causes the volcanic activity in what has been termed the Ring of Fire of the Pacific Ocean.

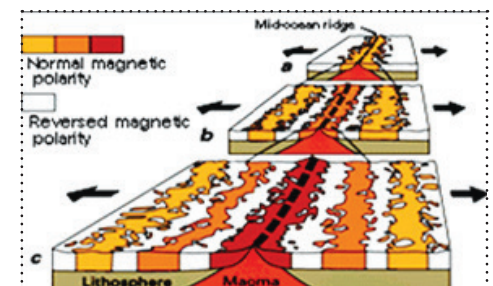
## EVIDENCES SUPPORTING THE THEORY OF PLATE TECTONICS.

### Distribution of Earth Quakes:

Earthquakes epicenters do not occur randomly; most are located in long narrow zones at Mid oceanic ridge and Marginal trenches in the oceans. Since earth quakes are generated by storing and then releasing fractional energy, these zones must be places where lithosphere plates are moving and interacting with one another.

### Heat Flow from the sea Floor:

Because the interior of the earth is hot, heat continually escapes through the crust. The heat flow is determined by the increase in temperature with depth. The greater, the "temperature gradient", the greater is the heat flow. Heat flow measurements on the floor show that it is very high at mid oceanic ridges. As sea floor spreads away from the ridges, it cools and subsides.



### Thickness and age of sediments on the sea floor:

Sea floor spreading predicts that oceanic crust becomes older





with distance from mid – oceanic ridge spreading centers. Therefore, the thickness of sediments should increase with distance also, because there is more time for sediments to accumulate on older crust.

#### **Magnetization of the oceanic crust:**

The regular magnetic patterns of the sea floor were first observed in the 1940s and 1950s. The interpretation of those patterns, resulting from periodic

reversals of “Earth’s magnetic field and the continuous creation of the oceanic crust- became perhaps the most convincing evidence in support of sea – floor spreading.

## **Sea Team Management Recruited B.Tech and GME Cadets of RLINS**

Sea Team Management , a Singapore based company, conducted an online test for recruiting cadets at Chennai on 2nd July,2019 at their Chennai office which was followed by a personal interview to induct the successful cadets in their organisation. In its pursuit of the selection process for the meritorious candidates, five cadets from B.Tech Marine Engineering and one cadet from GME were placed as Trainee Marine Engineers. The following is the list of students who got their berths in the Sea Team Management.



ID:1559608002  
Akash Singh,  
B.Tech Marine Engineering



ID:1559608013  
Manishankar Jha,  
B.Tech Marine Engineering



ID:1559608019  
Rishi Vasdev,  
B.Tech Marine Engineering



ID:1559608024  
Sri Nanda Kumar R,  
B.Tech Marine Engineering



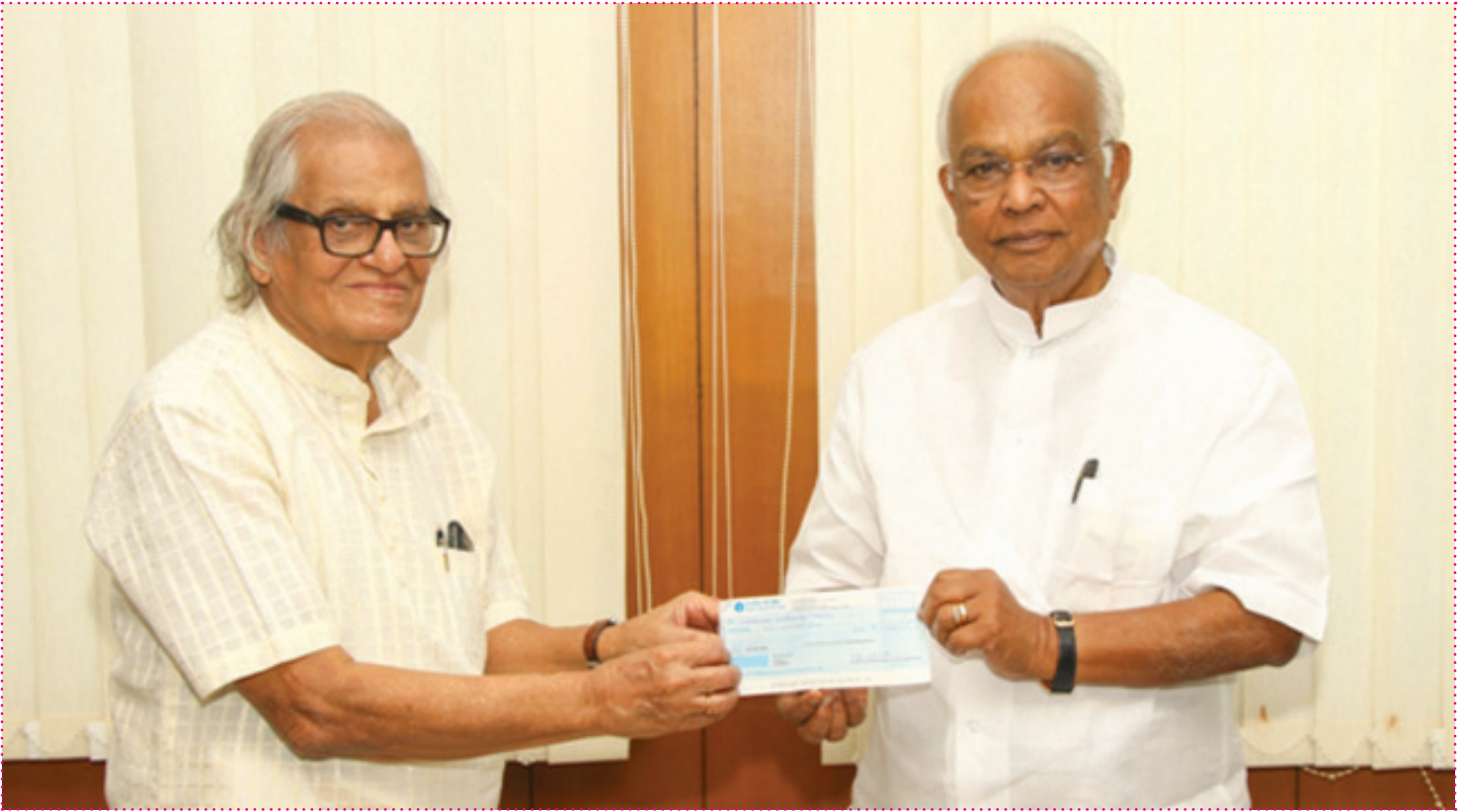
ID:1559608026  
Vandana Singh,  
B.Tech Marine Engineering



ID:2018RG019  
Kamble Nikhil Eknath,  
GME



# A Touch of Philanthropic Attitude.



Shri. K.R.A. Narasaiah, a very senior marine engineer and ex-vice president of our governing council, donating a cheque of Rs. 10,000 to our president Dr. R. Lakshmiopathy for the Vidya Ganapathy Temple in our campus.



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