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# The important of verification Process to improve container weight accuracy

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# The Important of Verification Process To Improve Container Weight Accuracy

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# The Important of Verification Process to Improve Container Weight Accuracy

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## **Background**

The most costly container vessel catastrophe in maritime history occurred On Thursday 18th January 2007, when MSC Napoli, carrying 2,323 containers, grounded and suffered a hull failure in the English channel. It claims not only ship and cargo lost but also environment disaster as over 200 tons of oil polluted the water and the beach. The London Steamship Owners Mutual Insurance Association revealed the insurers estimate of the bill for the wreck, including the salvage operation, clean up, vessel and cargo costs was £ 120 million.

The official UK investigation, in their report, "*Report on the investigation of the structural failure of MSC Napoli*", U.K. Marine Accident Investigation Branch, Report 9/208, April 2008, p.28), revealed that apart from stormy weather, the accident was caused by miss declared container weight. The weights of containers were 312 tons heavier than what mentioned in the manifest. Wrong information on container weight leads to a bad arrangement of stowage plan that is the main factor of hull failure.(Council, 2013)

Ideally, the weight of the cargo is distributed evenly along the hull of the ship, and the heavier containers are loaded on, the lower deck. Uneven distribution of cargo may trigger 'hogging' or 'sagging' condition. Hogging arises when most of the cargo's weight has been stowed in the forward and after holds of the vessel, causing the two ends of the ship to drop lower than the mid ship portion. Conversely, if most of the cargo is stowed in mid ship, the two ends of the vessel tend to be higher than the mid ship portion. This is called sagging. Both hogging and sagging have an adverse effect on the hull and impair the vessel's stability.(Alan Edward Branch, 2014)

The accuracy of container weight is a primary concern for a Chief Officer on board. A Chief Officer often receives different information of container weight from shipping line and container

terminal operator. Shipping lines bases the container weight on shipper information that may only cover cargo weight and estimation of container weight. In other hand, terminal operator bases on terminal equipment are weighing. The discrepancy information is a frustrating for a Chief Officer, especially when the vessel is fully loaded. For safety reason, Chief Officer cancel loading some containers, which, of course, is not expected by shipping line and the shipper.

The accuracy of container weight is also an issue for the port industry. In the case of overweight cargo, inaccurate cargo weight information may break the container during the container is transferred. It also can trigger the port equipment failure even a severe accident during operation. The International Association of Ports and Harbors (IAPH) reported, that Accidents in terminals, road traffic accidents and difficulties making correct vessel stowage plan is the most concerned risk (IAPH, Safety, et al., 2012).

## **Container Weight Verification**

The vessel accident and the concern from maritime industry show that the container weight accuracy issue still needs to be promoted as a paramount safety requirement. International Maritime Organization (IMO) has regulated this matter through International Convention for the Safety of Life at Sea (SOLAS) since 1974. SOLAS requires the shipper to declare the container weight, by providing writing document prior loading on the ship (Regulation VI/2, VI/3). Nevertheless, there was no effective enforcement to verify the accuracy of the weight of containers.

To improve the enforcement of the container weight declaration, IMO has amended SOLAS through Maritime Safety Committee (MSC) on 17-21 November 2014. SOLAS Chapter VI requires the shipper to get verification on their container weight declaration from the competent authority of the State in which packing of the container was completed. Hence, container without weight verification is not allowed to be loaded on the ship. This amendment is expected entry into force date of 1 July 2016.(IMO, 2014)

## **Weight Verification at Shipper Side**

Verification is a challenging key point on SOLAS amendment. Theoretically, the shipper should declare the weight and get verification from the authority before the container is loaded. Nevertheless, in operational level it is not practical, considering a big number of the shipper and the mechanism in checking the verification. Thousands of registered shippers located across the country could be a significant challenge for the authority in monitor the weighing method of each shipper. The authority should provide massive resources to make sure the shipper comply with the standard of the weighing method before granting the verification.

The mechanism in checking of weight verification is another challenge. SOLAS amendment requires the shipper to transmit the weight verification to the shipping line or port of loading. It means the Shipping Line and Container Terminal has an obligation to collect and check the verification before loading the container on board. This process may interrupt the vessel operation if the some containers do not have weight verification. As the consequences, the container without weight verification should be canceled for loading and wait for the document.

To help the mechanism of verification, Electronic Data Interchange (EDI) is suggested to be used. The process of submission by shipper, verification by the authority and the transmission to terminal and shipping line are efficient by using EDI. The only challenge is to how build the electronic infrastructure to connect shippers, the authority, container terminal, and shipping line. Again, some shippers may not able to provide such electronic infrastructure due to financial limitation.

## **Weight Verification at Port Side**

Considering the complexity of verification at shipper side, it is more practical if the weighing verification is established in the port or terminal side. The Number of the port in a country is few, hence it is easier for the authority to control and monitor the weighing process. Building a common weighing facility is more economical than building individual weighing facility in

shipper factories. In fact, most of container terminal have already had weighing facility commonly terminals use the weigh bridge and or yard lifting equipment as a weighing tool.

Weight measurement through a weighbridge produces less accurate container weight. When the truck enters container terminal gate and passes on the weighbridge, the machine will calculate the total weight of the truck plus the weight of the container/s. Then the total weight of the loaded container is deducted from estimated weight of the truck according to truck types. Nevertheless, due to so many variations of truck types, some types of the truck may not be identified correctly. The accuracy even worse when two unit of twenty feet containers is carried on one truck. It is impossible to get weighing accuracy for each container, as the weigh bridge calculates the total weight of two containers and the truck.

Another problem of Measuring through the weighbridge is a truck queuing problem. Weighbridge facility is usually located in the gate area of container terminal with a limited number. The process of weighing may increase gate transaction time. Hence, it potentially creates truck queue during peak time.

Measuring by yard lifting equipment produces more accurate weight information than weighbridge. At the time arrived at the yard are, lifting equipment will lift the container off the truck and at the same time measure the weight of the container. The method produces not only accurate weight information but also faster measurement process. The number of lifting equipment is commonly much bigger than some gates weighbridge. Hence, it will reduce gate transaction time, and no queuing problem will occur.

Unfortunately, the feature of weighing container currently is not a standard requirement in the current regulation. A joint initiative of Port Equipment Manufacturers Association, TT Club and ICHCA International in their report of Recommended Minimum Safety Features For Container Yard Equipment, has included the measuring feature as part of minimum safety requirement. The System to measure, indicate and record the actual weight and eccentricity of each container/load. Data to be capable of being transferred to the terminal operating system.((Club, et al., 2012)

## **Conclusion**

The accuracy of container weight is a concern of shipping industry. It is related to the safety, and sustainability of container transportation. Due to its importance, in November 2014, IMO and the IMO member governments has amended SOLAS chapter VI. It requires the shipper to get verification on their container weight declaration from the competent authority of the State in which packing of the container was completed. This amendment is expected entry into force date of 1 July 2016.

Verification is the key point of this amendment. An effective method is required to perform verification. Verification process at the port with yard lifting equipment is the most efficient way. Therefore, support from the authority, port operator and equipment manufacturer is required to do this practice as a standard procedure in improving the safety of container transportation.

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