

IUMI Policy Agenda

3. Containers lost at sea

Brief description

According to the World Shipping Council a number of containers are lost at sea each year. High profile accidents include the One Apus which lost a total of 1,816 containers (November 2020) and the Maersk Essen which lost 750 containers (January 2021) during their respective voyages. These events show the necessity to review the root causes of the incidents. A complex set of technical and operational aspects play a role requiring a careful assessment.

Container ships have grown at an incredible pace over the past 40 years. While the maximization of economies of scale and the overall impact of transportation costs is impressive, this does come with increased risk.

The growing size of container vessels has led to large beams and container stack heights which result in relatively large metacentric heights (GM). This makes the vessels very stable/stiff which in rough weather conditions can cause high rolling accelerations. The effect of strong winds on the on-deck container stacks, also known as 'sail area' or 'air draft', further increases the windage area causing extreme momentum. Specific wave patterns may also lead to violent movements such as parametric or synchronous rolling, exerting severe loads on the container lashing and securing gear.

The stowing, lashing and securing of containers is another factor potentially contributing to the loss of containers at sea. The distribution of weight within a container stack has an impact on the stability of a vessel. If the weight of a container is not properly declared it may be stowed in an unsuitable location within the stack, causing its collapse. When considering the impact of improper container weight and number of containers transported by these ships, the multiplied effect is an important consideration. Enforcement of the IMO's verified gross mass (VGM) regulation is therefore critical to the safe operation of containerships.

Improper or damaged lashing and securing equipment, twist locks and containers can also cause the collapse of a container stack. A chain is only as strong as its weakest link, hence one element in the container stowage and securing process may lead to the collapse of a container stack which in turn may clash with its neighbouring container stack causing the breakdown of several stacks.

On the operational side, calculation methods are used to determine the maximum capacity of containers to be loaded for a vessel. These models are based on “in-design conditions” which preclude, for instance, unfavourable sea conditions. “Off-design” conditions must be averted by the crew at an operational level, e.g. through weather routing and passage planning. The accuracy of these calculation models is an essential safety component. The models also underlie economic considerations to maximize a vessel’s capacity. The rules for the calculations must therefore be based on a level playing field which ensures that they keep within safe boundaries.

Other contributing factors may involve human error, including, but not limited to, errors in cargo stowage plans, improper adherence to container stack plans, correctly following lashing plans, re-securing of lashings during voyages, poor cargo stowage within containers, adherence to weather routing, and prudent vessel navigation while in heavy weather.

Climate change and the increasing frequency of severe weather both at sea and ashore is a factor. Improvements in marine weather forecasting and weather routing services are beneficial in planning for severe weather.

Cargo underwriters have been and will continue to be impacted by the loss of containers overboard. The high number of casualties within a short period of time is unprecedented. IUMI takes the view that although it is premature to define this as a systemic threat, every container lost is one container too many. Losses are not just limited to the containers lost overboard. There is also cargo damaged as a result of container stack collapses, damages to the vessels, and environmental impact. Resulting Cargo, Hull & Machinery, Protection & Indemnity and Marine Liability losses as well as uninsured losses have a significant economic impact. There is also concern that salvage capabilities have not kept pace with the increase in vessel size. Therefore, the various aspects relevant to the safe carriage of containers must be reviewed and action taken to correct the shortcomings.

Work to this effect is ongoing in the TopTier Project hosted by the Dutch MARIN Institute. IUMI is involved in several of the work streams which aim to address the problems in its full complexity. An initial outcome of the project is a Notice to Mariners which provides guidance to crew and operational staff of container vessels on how to plan, recognize and act to prevent parametric rolling in following seas. Several education videos have also been published. IUMI further co-sponsored two updates to the IMO on the progress of the MARIN Top Tier Joint Industry Project (JIP) on securing container safety which includes detailed information about the work streams.

In May 2021, the IMO Maritime Safety Committee (MSC) agreed to develop measures to facilitate detection, reporting, positioning, tracking and recovery of containers lost at sea as a new work item. In June 2023, MSC 107 approved draft amendments to SOLAS which will require the Master to report without delay any lost containers to the nearest coastal State and the flag State. The amendments are expected to enter into force on 1 January 2026.



In February 2023, IUMI co-sponsored a paper to the Maritime Safety Committee, proposing new output on prevention of loss of containers at sea. The proposal was agreed by MSC 107 in June 2023, and subsequently allocated to the Sub-Committee on Carriage of Cargoes & Containers (CCC) and the issue will be discussed at CCC 10 in September 2024. Further, MSC 107 also agreed to include an output on 'Revision of the Revised guidelines for the preparation of the Cargo Securing Manual (MSC.1/Circ.1353/Rev.2) to include a harmonized performance standard for lashing software to permit lashing software as a supplement to the Cargo Securing Manual'. This new output originated from the regular exchanges between IACS and IUMI.

IUMI will:

- Support the implementation of the findings of the TopTier JIP into the IMO to affect regulatory improvements with regard to containers lost at sea.