



**SAFETY**

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## Attention turns to dangerous cargo

Recent incidents involving vessel fires have highlighted the need to have in place the correct and safest procedures when it comes to booking and transporting dangerous and hazardous cargoes.

Huge volumes of chemicals are moved by ship, and a higher proportion of these commodities are being moved in containers as supply chain changes necessitate consignments are moved in smaller lots on a more regular basis.

With incidents of cargo being misdeclared and/or inappropriately loaded increasing and such events seen as a major cause of fires and explosions on container ships, the risk of injury and even death to crew and serious damage to equipment is rising. These fires also result in dangerous emissions being released into the atmosphere and can cause significant pollution of the oceans.

### Counting the cost

Then there are the commercial costs stemming from General Average having to be declared, significant amounts of cargo having to be written-off, and supply chains being severely disrupted. In several incidents, for instance, importers/exporters have had to use alternative transport modes to move cargo, in order to keep production lines rolling and retail outlets stocked. Invariably, this has meant using very expensive airfreight services.

The increasing number of incidents is also resulting in insurance premiums being hiked, with beneficial cargo owners, operators of container and associated equipment used to carry cargo and shipowners (for hull and machinery) paying more.

Ten of so serious fires have been reported on container and/or ships over the past 12 months, including:

- **MAIBAK THORAN** (15,326 TEU) - incident occurred in March 2018 approximately 900 miles southeast of the port of Salalah (Oman). Sadly, five crew were

**A spate of fires on ships this year has once again raised awareness of inherent dangers in the container supply chain**

- killed and General Average declared.
- **YASHAN EXPRESS** (7,510 TEU) - fully cellular container ship owned by Hapag-Lloyd and deployed on Asia/east coast North American service, via Suez Canal, fire was discovered in a single container in early January 2019 while the ship was approximately 800 miles off the Nova Scotia coast. The fire resulted in almost 200 containers being totally lost. The vessel was towed to free-
- port, Bahamas, for final salvage work.
- **SURETTY ACE** - CMA carrier operated by Mitsui OSK Lines and with 3,500 vehicles on board, sixteen crew were rescued but five tragically perished.
- **MS VASA-OVER** (9,200 TEU) - fire in cargo hold while sailing between Shekou, southern China and Singapore.
- **GRANDE AMERICA** - the combined ro-ro/container ship operated by Grimaldi was a total constructive loss as



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the vessel sink in the Bay of Biscay.

- **GRANDE EUROPA** - also operated by Grimaldi, two fires broke out while en-route between Salerno and Valencia.

### Tackling the problem

According to research conducted by the London-headquartered TT Club, the specialist insurer of equipment used in the international freight transport/logistics sector, a major container ship fire at sea occurs on average every 60 days. Using the Club's insurance records, it identified that 66% of incidents causing damage to equipment in the multimodal transport chain were attributable to poor practices in the overall packing process. While this included poor stacking/storage techniques, including the use of improper securing methods for the cargo, it also involved inadequacies when it came to identification of the cargo, its declaration, documentation and then exchange of information.

The TT Club estimated that the "calculated cost" of these claims in the marine, aviation and transport (MAT) insurance sector

amounts to over US\$500M a year.

It is no surprise, therefore, that Peregrine Storrs-Fox, risk management director at the TT Club, wants action taken. "We are endeavouring to focus all direct and indirect stakeholders on recognising and doing the right thing," he said. "A critical aspect of this is the correct declaration and handling of dangerous goods."

The TT Club has worked tirelessly with many organisations on this front, including with UK P&I Club, Faxis Technologies and the Hazcheck Restriction Portal, which is designed to identify and streamline the complexity of regulations and protocols imposed by carriers and ports around the world in relation to transporting declared dangerous goods.

Other groups, including the International Maritime Organization (IMO), the UK Chamber of Shipping and ICS/ICA International, the cargo handling operators association, are also actively calling for change. A mandatory order similar to that introduced in 2017 to stop over-weight containers being moved is possible, but it will take time.

Ocean carriers are also involved in various initiatives to tackle the problems. Several years ago, a number of the world's largest lines, including Maersk, MSC, CMA CGM and Hapag-Lloyd, set up the Cargo Incident Notification System (CINS).

Intelligence is regularly exchanged between the members of CINS and this has resulted in a number of commodities being identified as potentially causing problems in containers and on ships. As a result, best practice procedures are being implemented to ensure that the chances of repeat accidents occurring are lessened.

CINS is also working closely with the US National Cargo Bureau (NCB) in an exercise that is randomly inspecting containers carrying imports into the US. Up to 500 containers will be selected for the checks.

While NCB has been carrying out inspections on containers for many years, its work has mainly been for specific customers and for US exports. The bureau has found serious shortfalls in all areas of safety and compliance. These failings have included inadequate

storage of hazardous goods in the containers, vessel stowage plans that neither met the IMDG Code of conduct or vessels' documents of compliance, and improper placarding (labelling) of the cargo. NCB's average failure rate has been 9%. Potentially that is a fire, an explosion or some other incident waiting to happen.

Storrs-Fox, who has also led the Cargo Integrity Campaign for several years, sees this as a forum that can be used for this purpose. He noted that "all types of cargo can be mishandled". But the executive stressed that "wrongly classified, labelled, packed or simply inaccurately identified dangerous commodities are the greatest potential risk of disaster".

He continued: "There is very much still to be done in achieving true cargo integrity. Our diverse campaign is seeking significant cultural and behavioural change, to say the least. Certain elements may require legislative action, enforcement and inspection, and there are great challenges in the field of technological development. Above all, there is a need for all involved in the supply chain to



As well as containers on board, the ship's aft and accommodation block were badly damaged in the MAIBAK THORAN incident

have a realistic perception of risk and a responsible attitude towards liability."

### Assessing scale

But the actual scale of the problem is difficult to quantify, according to Storrs-Fox. "Estimating the degree of failure to comply with best practices is not straightforward," he said. "ICHCA has calculated that, of the 60M packed containers moved each year, 10% or 6M are declared as dangerous goods, while information from published government inspections, which are invariably biased towards declared DG loads, suggests that 20% of these are poorly packed or incorrectly identified. Potentially, this translates into 1.3M TEU unstable dangerous goods containers travelling around the world each year."

He also pointed to Cargo Profile, an algorithm developed by Hapag-Lloyd to search its booking system for potential misdeclared commodities, as offering at least some intelligence.

"Results from Cargo Profile, when extrapolated to the carryings of all lines, concludes a reasonable estimate that in excess of 150,000 volatile containers are in the supply chain each year," he said.

While this is only a small percentage of the more than 200M loaded TEU shipped across the oceans each year, it needs to be stressed that each one could result in a catastrophic incident that could cause a ship to be lost and crew to be killed.

Unfortunately, the MAERSK ROMAN incident did result in such a tragedy with five crew members killed and the aft of the vessel including its accommodation block destroyed. The incident has attracted considerable interest, largely because of the size of container ship, the scale and intensity of the fire, and the difficulties faced by the salvage team in tackling it (see box story, p65). Additionally, the ship is owned/operated by Maersk Line, the world's largest liner shipping company, and one that has safety and security in its DNA.

### Stowage changes

Immediately following the incident, Maersk tightened its safety procedures further by introducing so-called "risk-based dangerous goods stowage principles" into its operations. Effectively, the carrier no longer stacks containers loaded with IMDG declared cargo next to the accommodation tower or the main propulsion plant, which is defined as the zone with the lowest risk tolerance. With below-deck and mid-ship stowage also having higher risks, Maersk's strategy is to load IMDG cargo either on deck at the fore or aft ends of its vessels. These are identified as the areas where, if there is an incident, the risks to the ship and crew are at their lowest.

While there was no loss of life in the GRANDE AMERICA incident on 10 March 2019, all 26 crew and the single passenger on board had to be evacuated from the Grimaldi-operated vessel. It sank 140 nautical miles southwest of Brest,

northwest France, in 4,600m of water on 12 March.

Another ship operated by the Naples-based carrier, which specialises in the movement of ro-ro cargo, including new and second hand vehicles, rather than containers, was also involved in the latest incident in the Mediterranean. In this case, two fires broke out and the vessel needed to be towed into the port of Palma de Mallorca.

At the time, the ship involved, GRANDE EUROPA, was carrying 1,687 vehicles (mostly newly manufactured) and 49 containers (mainly loaded with food products). Of the 25 crew on board at the time, 15 were evacuated, with the rest staying aboard to fight the fires. The ship, which is over 20 years of age, is deployed in the carrier's Euromed service.

### Carrier report

In an official statement, Grimaldi said: "The alarm was given by the crew about 12:45 hours on Wednesday (15 May) that a fire had broken out on deck 3, and it was completely extinguished by the crew after about 45 minutes. A second alarm was located about 04:00 hours on deck 8, which spread to deck 9, and the crew again intervened with fire-fighting equipment. The master informed the Italian and Spanish authorities and the Grimaldi Group's headquarters of the fires."

The statement continued: "Fifteen crew members were evacuated about 09:30 hours by a Spanish Coast Guard helicopter, which transferred them to a Spanish Navy unit. All were in good condition, according to the Salvamento Marítimo, a Spanish sea search and rescue agency. The fire was put out about 14:00 hours with the use of a Spanish fire-fighting tug."

Based on information from the crew, Grimaldi has undertaken preliminary investigations into the two incidents. The company has identified that the two fires involved different new vehicles and not containers, and spread to neighbouring units quite quickly.

While more detailed reports on the incident will be compiled, Grimaldi has said that it will be launching a safety appeal that, in its words, will "introduce more stringent controls and regulations on cargo sea transport".

Specifically, Grimaldi is calling for greater controls to be placed on car batteries, which often cause short-circuits on vessels, and for there to be a "total prohibition of the presence of personal effects in second-hand vehicles embarked on ro-ro vessels".

It is not known whether the two vehicles involved in the GRANDE EUROPA incident were fully electric, but problems in moving Lithium-ion batteries have been well documented because of their propensity to catch fire.

In other developments, the carrier has urged the IMO to make mandatory the certification by a classification society of the correct stuffing of containers carrying dangerous goods. □