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MAKING SENSE OF RISK

Shipping project cargo on container vessels

Container vessels are becoming the transport method of choice for businesses transporting project cargo – equipment that's over-dimensioned, heavy, high-value or project critical.

In this marine risk engineering guide, we take a look at what's needed to secure this high-value cargo to ensure it reaches its destination safely. Failure to do so can become extremely costly for all parties involved.

The pros and cons of shipping project cargo by container vessels

At Liberty Specialty Markets (Liberty), project cargo is big business. In 2020 alone Liberty insured projects in the Asia Pacific region which amounted to a cargo value of just over US$7.5 billion. Container vessels continue to be a common method of transport.

It's potentially risky business, and we see project cargo losses arise from simple handling damage as well as more catastrophic damage such as when cargo is dropped during loading or unloading.

There are a number of advantages to shipping on container vessels:

- Companies offer fast and fixed routes
- Cargo arrives at well-connected container terminals – making for easy onward inland connections
- Standardised shipping methods
- Most routes are served by large reputable lines.

However, there are some inherent risks that come with shipping project cargo on container vessels:

- Container terminals and shipping lines may not be experts in loading, stowage and securing of project cargo as break bulk onto container ships
- There are restrictions with regard to the lifting methods and capacity of shore cranes at the container terminals for loading and discharging
- Shipping numerous project cargo items by container liners may not be the most economical way of getting the cargo to site.

Ensuring the cargo is secure and shipped correctly is imperative. If it's not carefully planned and expertly considered, the potential for damage increases considerably.

Secure shipping: careful planning needed

There are two main methods of securing project cargo on container vessels:

1 As break bulk cargo on flat racks secured to the cargo hold or on deck

OR

2 As cargo pre-loaded and secured to a flat rack before loading to the container vessel as a single unit

In the first case, as with all project cargo, it's important to consider the transport-related accelerations that will be experienced on the voyage and the necessary cargo-securing calculations.

For cargo that is pre-loaded to flat racks ashore, we need to consider the distribution of the weight on these flat racks.

Know the codes

Methods of shipping project cargo are comprehensively covered within the Code of Safe Practice for Cargo Stowage and Securing (also known as the CSS Code). The purpose of this code is to provide an international standard to promote the safe stowage and securing of cargoes.

Methods for packing cargo transport are covered in the Code of Practice for Packing of Cargo Transport Units (also known as the CTU Code). The purpose of this code is to facilitate the proper packing, transport and unpacking of cargo transport units (CTUs), including freight containers and flat racks.

''Any failure to adequately plan, load, stow and secure cargo can become extremely costly to both cargo owners, project operators as well as cargo insurers.''

Hanghei D'Aversa,
Assistant Vice President
& Risk Engineer, Marine
Liberty Specialty Markets

The power of preparation

Before cargo is loaded onto a vessel, it is extremely important to conduct a preload inspection.

It is not unheard of for cargo to arrive at the terminal in an incomplete state, or fitted with incorrect lifting points.

The preload inspection will also be a good opportunity to identify any damage, and/or the need to deviate from the plan and amend accordingly.

Initial cargo calculations, with estimated values for weight and centre of gravity, should be completed in order to test what has been learned on the preloading inspection.

This should cover:

- Cargo dimensions
- Available space onboard the vessel
- Stowage location
- Cargo securing points
- Required dunnage and load spreading members
- A lashing diagram to adequately secure the cargo as per CSS Code Annex 13 calculations.

When planning the transportation of project cargo on all vessel types, plans for stowage and securing of the cargo should be based on the most severe weather conditions expected on the voyage and the dynamic forces which are associated with this kind of weather.

Loading considerations

Before the cargo is loaded on board, the hold should be inspected. It's particularly important to assess the condition of the flat racks that are already loaded to the hold and will be used as the main base for the loading of the project cargo.

It may be necessary to change out any damaged flat racks prior to loading.

Before the cargo is lifted on the container gantry crane within the terminal, it's imperative that lifting equipment is inspected for safe working load and capacity, and the overall condition verified.

From there, it's critical to confirm the limiting loads on the flat racks being used. Longitudinal and transverse load distribution is important to consider, ensuring the weight of the cargo is spread over enough mainframes with enough weight distribution materials, such as timber beams, to act as load spreaders.

Once loaded in its final stowage position, a final inspection should be made of all cargo securing devices, lashing points on the cargo and on the flat rack, the lashing materials and locking mechanisms.

As part of the cargo securing calculations the friction coefficient is considered, so ensure that timber or rubber matting is placed beneath the cargo to increase this friction. Lashings should also be protected against chafe on the cargo itself or the flat rack.

Finally, the lashing angles should be well documented and reviewed against the calculations made in accordance with the CSS Code Annex 13 calculations.

- Inspect the hold, particularly the flat racks
- Inspect the lifting equipment
- Confirm limiting loans on the flat racks
- Once loaded, inspect cargo securing devices
- Ensure timber or rubber matting is placed beneath cargo to increase friction
- Lashing angles should be documented and reviewed against calculations

In conclusion

Any failure to adequately plan, load, stow and secure cargo could become extremely costly to both cargo owners, project operators and cargo insurers.

Fundamentally, all parties have the same interests, to ensure the cargo is handled and shipped safely and to protect the cargo, ship and crew during all stages of the transportation process.

All personnel who are involved in the cargo loading, stowage and securing should be properly qualified and experienced in these operations, and the personnel who supervise these operations should have a sound and practical knowledge of the CSS Code (Code of Safe Practice for Cargo Stowage and Securing).

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