Marine Risk Consulting Bulletin

Why is a bulk carrier not fit for carriage of project cargo?

Selecting the right vessel to transport project cargo is essential for businesses involved in international trade. The type of vessel chosen significantly affects the safe and efficient delivery of valuable cargo. Therefore, cargo interests must understand the specific risks associated with vessel selection, particularly when considering bulk carriers for project cargo shipments.

The reason for drafting this document is that we continue to see bulk carriers, particularly for export from China, are utilised for project cargoes as this appears to be a more economically viable option for charterers. However, as AIG Marine Risk Consultants we are of the opinion that these vessels are unfit for the carriage of such cargoes as we explain hereinafter.

Several key factors should be considered when assessing the suitability of a vessel for transporting project cargo:

- Type of vessel
- Trading history and port state inspection records of the vessel
- Age of the vessel
- Reputation of the classification society
- Protection and Indemnity (P&I) Club membership

All ships carrying cargo other than solid and liquid bulk cargoes must have a Cargo Securing Manual (CSM) approved by their flag administration. The CSM details all lashing and securing arrangements as well as their proper application and recommended methods for securing cargo. Shipowners may need to modify the lashing setup or provide additional lashing equipment.

When considering the use of bulk carriers for project cargo, it is important to note that these vessels are generally not designed or equipped in the same way as general cargo or multipurpose ships. Additionally, bulk carrier crews may lack experience in stowing and securing break bulk or project cargo.

Damage to project cargo typically occurs when it is loaded on top of other cargo, such as flexible intermediate bulk containers (FIBC) or steel cargoes.

Example of project cargo loaded on top of other cargo (Image ©AIG)

Heavy project cargoes placed on top of bagged cargo can pose problems, as they do not provide a firm base for secure stowage. FIBCs must comply with the International Organisation for Standardisation (ISO) standards, which dictate the maximum compressive load that each type of bulk bag can withstand. FIBC manufacturers specify a maximum stacking height to avoid excessive compressive loading, typically limiting the stow to three tiers. These bags are not designed to support break bulk cargo on top.

Placing break bulk cargo on top of bulk bags can create other issues in the accessibility of suitable lashing points because the vessel may not have appropriate securing points at higher locations on the bulkheads.

Lashings are vital for securing project cargo on ships Particularly in adverse weather conditions. These lashings attach to specific lashing points on both the cargo and ship. Other lashing materials such as steel plates or beams can be used and are welded directly to the structure of the ship. The selection, number, and distribution of lashing materials requires careful consideration. For example, when choosing a lashing chain, factors such as length, angle, elasticity, and safety factors must be considered. When a project cargo is stowed on bulk cargo, suitable lashing points may be unavailable, or may provide unfavourable angles or distances for the lashings. The inaccessibility of suitable lashing points has lead stevedores or ship's crew lashing project cargo to other cargo, this should not occur.

Additionally, vessels not specifically designed for breakbulk cargo, such as bulk carriers, may not have sufficient lashing points to secure these cargoes. If this is the case, additional lashing points may need to be included. D-rings, particularly the LP-11 type, are commonly used for securing chains, wires, or straps. The LP-11 has a breaking strength of 36 tons and a maximum securing load of 18 tons. These D-rings must be positioned over the vessel's strong points, such as along a frame under the deck. Restricted access to lashing points can lead to their overloading and subsequent failure. The same theory can be applied to designated lashing points on the cargo itself, and these should not be overloaded to make use of accessible lashing points. Proper positioning of additional lashing points is crucial to avoid incorrect placement and potential damage to the structure of the vessel. Class or third-party consultants can offer guidance on positioning and fitting if needed.

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Other considerations when loading project cargo on bulk carriers include the maximum load capacity of the tank top or tween decks. Heavy project cargo may create a point load that is not typically present, with bulk commodities spread over a larger area. Additional load spreading may be necessary to avoid exceeding the maximum-point load. Cargo should be appropriately located with respect to the structure of the ship.

Bulk carriers are often not designed to carry cargo on deck. It is essential to ensure that the tank top and hatch cover strengths can support the project cargo. Decks, especially hatch covers, must be strong enough to support this cargo weight. Additionally, when fully loaded, bulk carriers may have a low freeboard, increasing the risk of cargo damage from green seas on deck and spray.

Bulk carriers typically have wide free weather decks adjacent to the hatch covers, whereas general cargo vessels have very narrow / small weather decks and raised hatch coaming to accommodate the carriage of containers/project cargoes at elevated levels such that the exposure to massive green seas is minimised. Bulk carriers typically ship large quantities of sea water over their weather decks during adverse weather conditions as such they are not designed for carriage of project cargoes on deck.

Does the above mean that project cargo cannot be moved on a bulk carrier?

In our view the only way to safely move project cargo on a bulk carrier is when stowed, lashed and secured under deck directly onto the steel tank top and lashing are placed on suitable lashing points on the items and inside the ships hold.

As previously highlighted, lashings should never be placed from “cargo to cargo” always from “cargo to ship”.

For further information, please contact your local Marine Risk Consultant.

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