Carriage of containers on bulk carriers

Are conventional bulk carriers suitable to carry containers? This question has been raised by several industry bodies in recent weeks and in this article we will look at the technical and legal implications of such conversions.

Published 04 October 2021

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The transportation of containers on bulk carriers is not a new trade phenomenon. However, in today's article we will look at some technical and legal aspects of this trade and more importantly, share some of the issues that owners and their crew are likely to face.

The obligation of seaworthiness

A vessel owner is obliged to provide a seaworthy ship to carry goods by sea. Contracts of carriage include both bills of lading and charterparties. Under common law, the seaworthiness obligation is absolute and non-delegable. Broadly speaking, seaworthiness is the fitness of the vessel to

- encounter the ordinary perils contemplated for the voyage, and
- carry her intended cargo.

As an example, the NYPE charterparty requirement is for the vessel to be *"tight, staunch, strong and in every way fitted for the service"* . The seaworthiness obligation also extends to the competence of the crew on board the vessel.

Most bills of lading and charterparties incorporate a paramount clause such as the Hague/Hague-Visby Rules which reduces the standard of seaworthiness to one of due diligence. For example, Article 3.1 of the Hague/Hague-Visby Rules provides:

"The carrier shall be bound before and at the beginning of the voyage to exercise due diligence to make the ship seaworthy, properly man, equip, and supply the ship, make the holds, refrigerating and cool chambers, and all other parts of the ship in which goods are carried, fit and safe for their reception, carriage and preservation."

This means that a shipowner must have taken all reasonable precautions to ensure that the vessel is properly manned, equipped, and suitable for the cargo service. Different jurisdictions may also implement different carriage of good by sea (COGSA) laws mandatorily by statute, which may impose a different standard of seaworthiness. That the vessel is in Class, or has modifications approved by her Classification Society does not automatically mean the vessel is seaworthy.

If a vessel which has all the necessary class certificates nevertheless has an incident caused by items verified by class, the liability would remain with the shipowner if the vessel is found to be unseaworthy following an investigation.

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Given the claims values involved where cargo or containers are damaged, allegations of unseaworthiness inevitably arise after an incident irrespective of class approvals. Below, we identify and discuss some of the technical issues shipowners should consider to avoid allegations of unseaworthiness of a bulk vessel to carry containers and defend claims should they arise.

Can an owner refuse to carry containers on board?

Charterparties for bulk vessels almost always contain trading exclusions and cargo exclusions. Not surprisingly, owners of dry bulk vessels would not have contemplated the carriage of containers when entering into medium- or long-term time charterparties. Can owners refuse an order to load containers on board a bulk vessel where the charterparty does not expressly exclude them?

The position is uncertain. However, owners can look to the vessel description clause in the charterparty, which would usually indicate the contemplated trade. For example: *"Vessel is a bulk carrier, fully fitted to carry grains and in a thoroughly efficient state to trade dry bulk cargoes"* indicates that the vessel has been chartered to carry dry bulk cargoes, including grain in particular. It remains to be seen whether it might be arguable that this excludes carriage of containers (which will in any event depend on the terms of the particular charterparty) and it will be interesting to see whether this is raised in the future.

As discussed below, a conventional dry bulk vessel will need modifications to her design, approvals/permissions, and additional documentation before carriage of containers can be contemplated. In short therefore, a conventional bulk vessel may not be considered cargo worthy or seaworthy as-is, and owners may be able to reject the carriage of containers under a standard dry bulk charterparty.

Where a wide range of trades not specifically including reference to containerised cargo is covered by the charter, the owners would probably not be obliged to have fittings for containers. Of course, that is not the same as an ability to refuse to carry containers, but it does put some of the expense of doing so onto the charterer unless the ship has been expressly chartered for the purpose of carrying containers.

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The argument that charterers would be obliged to provide and pay for (and remove, at their cost at the end of the charter period) any modifications required to allow carriage of containers can be further strengthened by the charterparty terms. See for instance NYPE 1993 cl.7: *"The Charterers shall provide and pay for necessary dunnage and also any extra fittings requisite for a special trade or unusual cargo ..."* It seems likely that carriage of containers on a drybulk vessel would be a special trade or unusual cargo. The Baltime form only requires that the ship has fittings *"for ordinary cargo service"* and again, it seems likely that fittings for containers would fall outside this description on a drybulk ship.

Are bulk carriers suitable to carry containers?

Our first response to the question of the carriage of containers on bulk vessels is that conventional bulk carriers are not designed to carry containers in the holds. If a bulk operator is required to carry containers, the vessel should have the necessary fittings, documentation, approvals, and a trained crew to be able to safely facilitate the trade.

To understand the processes involved in converting bulk carriers for the carriage of containers on board, we contacted a few of our Members who had successfully made this transition. Below are some important points to consider.

Securing arrangement and cargo spaces: The vessel securing arrangement is the starting point to decide whether the vessel is suitable for conversion. In most cases, a **typical log carrier** is the most suitable to carry containers given the existing securing arrangement and associated strength of the tank top and hatch covers. According to some class societies, folding type hatch covers are much better than side rolling hatch covers to facilitate large enough openings into the cargo spaces during loading and discharging operations. If the vessel does not have a sufficient securing arrangement, this will need to be fabricated in the presence of expert supervision and all such modifications would require the administration's approval.

Structural strength: In addition to the securing arrangements inside and outside the cargo holds, the structural strength of the tank top as well as the hatch covers will also need to be verified to ensure that the collective weight of the stack does not exceed the maximum load/permissible point load (MT/m 2) on the tank top and the hatch covers. This verification would need expert supervision and guidance to the master on the use of load spreaders and other dunnage to distribute the weight and safely optimise the stack weight distribution. All calculations related to the adequacy of the structural strength would depend on accuracy of the declared weights (VGM) of the containers.

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Cargo securing manual: The cargo securing manual (CSM) for most bulk carriers may not incorporate the carriage of containers on board the vessel. This is an important aspect of vessel suitability as the CSM provides critical information on the strength of the lashings necessary for securing containers under specific GM (metacentric height) criteria. A vessel's suitability for the carriage of containers will require amendments to the CSM by incorporating lashing arrangements for the loaded containers under specific loaded condition(s) with ballast on board. This is likely to generate acceleration forces that may limit stack height of the containers and the CSM will provide some guidance on the securing arrangements accounting for the GM criteria.

Loading software: The loading software, commonly known as the "Loadicator" is a software version of the loading manual. The Loadicator on a conventional bulk vessel may not be designed to calculate the stability with containers as cargo and the cargo weight distribution may not be as homogenous as that of bulk cargoes. The other limitation of a standard Loadicator on bulk carriers is that it does not incorporate the requirements of the cargo securing manual which would invariably affect the vessel's ability to calculate stability and lashing requirements for the containers.

Carriage of dangerous cargo:

• *Fire detection:*SOLAS Chapter II-2 provides clear guidelines on the fire protection systems for cargo spaces for vessels over 2,000 GT but it does not cover fire detection inside cargo spaces. This is unique to bulk carriers as dedicated container vessels would have sample extraction smoke detection system and other means of fire detection inside cargo spaces. Our experience from handling several large fires on container vessels is that early detection is the single most effective way to fight the fire and bulk carriers will remain at a disadvantage in this regard unless a detection system is installed. If we couple this with the frequency of misdeclaration of contents of the container, the risk factor related to fire safety is high on conventional bulk carriers carrying containers as cargo, especially inside the cargo holds.
• *Fire fighting:*Fighting a fire inside a container comes with its own challenges. Given the widespread problem of misdeclaration, operators are recommended to equip their vessels with suitable means to fight a fire both inside and outside the cargo space. An extinguishing medium such as mobile water monitors and water mist lances, irrespective of whether the vessel has a document of compliance (DOC) for carriage of dangerous goods or not, could be effective in case of an emergency. As for fixed fire extinguishing systems for holds, most conventional bulk carriers that are approved to carry dangerous goods, will already have such a system installed.

Flag state/class approval process

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Documents submissions: Owners must seek permission from both the vessel's flag state and classification society if containers are to be carried on a bulk carrier. Class and statutory requirements will possibly be applied on a "case by case" basis and will vary depending on the class society and the flag state administration. The approval process could take a few days especially when done for the first time. According to one estimate, it took class 8-10 days to give final approval for the vessel to take first cargo of containers on a bulk vessel. Furthermore, depending on the requirements of the class, owners may require approval for each voyage prior to loading to ensure that all strength and stability calculations are within the safe margins. Owners should also bear in mind that some port states might require submission of certain documents. Generally, the below listed items will likely have to be documented in order to obtain the necessary approvals which could be per voyage or on a more permanent basis:

• Container Stowage and Lashing Plan in line with CSS Code and/or Cargo Securing Manual (CSM).
• Structural drawings of new structural elements for the fixed securing equipment for cargo holds/deck/hatch covers.
• Revised loading conditions, departure and arrival, with containers as cargo to be submitted for review for each voyage.
• Any changes or modification to the vessel's stability manual and software.
• Probabilistic damage stability calculations.
• Owners should also apply for Document of Compliance (DOC) for the carriage of dangerous goods, if necessary.

Owners should enter in a dialogue with their classification societies and flag states early to better understand the various requirements and approval process. It might also be a good idea to undertake a pre-assessment of the vessel to assess vessel suitability and the extent of modifications required.

The crew training and familiarisation

A well-trained crew on bulk carriers may not have the necessary familiarity with carrying containers. Therefore a mindset change will be needed on various aspects of safe carriage of containers on board as well as responding to emergencies. For this reason, some operators appoint port captains at the load port to ensure that cargo is loaded safely, secured as per CSM and that the vessel meets the stability criteria. While it certainly might be helpful, this cannot be a substitute for crew training and familiarization since they will be the ones executing the voyage. Let's look at some of the key points for operators to consider to familiarise their crew.

Knowledge of the cargo: There have been many casualties on container vessels due to the following conditions:

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• the contents of a container were misdeclared by the shipper leading to a fire incident,
• cargo was not properly packed and secured inside the container leading to damage, spillage and fires; and
• stack collapses caused by the weight of the container not being accurately declared or heavier containers loaded above the lighter ones.

It is therefore important that the operator has in place good KYC (know your customer) procedures to vet the charterers, shippers, freight forwarders and any others responsible for accuracy in declarations and request them to follow the CTU Code. It is imperative that the crew is familiar with the owner's KYC policy and at the same time conversant with the markings and labelling of the containers in accordance with chapter 5.3 of the IMDG code – Marking and labelling of packages including IBCs.

The crew should also familiarize themselves with the 'IMDG Code Supplement' to which they would need to refer in case of spillage or fire incident. Vessels might also need to carry additional medicines and equipment as mentioned in Appendix 14 of the supplement.

Loading software: The crew needs to be very familiar with the software used for stowage, segregation, stability and lashing. It may be that more than one software product is used to satisfy all the requirements in which case the crew should know how each one of these programmes work.

A small change in weight onboard, such as to the quantity of ballast in one of the tanks can have a considerable effect on the forces (shearing, torsional and bending) acting on the vessel and the GM (metacentric height). As such, it is important to make sure that accurate weights are entered for the cargo, ballast, fuel and so on This will largely depend on the accuracy of the declared weight of the containers.

Finally, the GM of the vessel loaded with containers will vary a lot depending on whether the heavier load is in the holds or on deck. Accordingly, the vessel may be tender (low GM) or stiff (high GM). The vessel will behave very differently in both these conditions. We have discussed the effects of this on the lashings in one of our loss prevention posters (accessible here).

On container vessels it is often the case that the visual drafts differ by a few centimetres from the calculated drafts in the loading computer. Crew should be aware of this, and an excessively large variation in the drafts will indicate that cargo weight has been inaccurately declared. Such would also affect the vessel's stability and it might be unsafe to depart without making proper enquiries.

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Lashing: Different kind of lashing and securing materials will be in use, such as base locks for the first tier, fully or semi-automatic twistlocks for tiers above, bridge fittings to secure the adjacent top corners of containers athwartship, lashing bars, turnbuckles and even chains. Lashings would also depend on the size (length and height) of the containers, for example, the lashing pattern for a 20ft container would be different than for a 45ft high cube container. Crew also need to be aware that the lashings for the seaside or corner stacks would not be the same as for the stacks toward the middle. All of these peculiarities will be detailed in the class approved cargo securing manual (CSM). Crew should therefore familiarize themselves with the requirements of CSM which is the single most important document for vessels engaged in carrying containers.

Container lashings are usually carried out by the stevedores and it is important that the crew of the vessel informs them of the required lashing pattern as mentioned in the CSM. On container vessels it is not uncommon to post a copy of the lashing pattern adjacent to each bay and also brief the foreman of the requirements. When calculating the lashing arrangement, it should be borne in mind that containers come in different sizes in terms of length (such as 20, 40, 45, 48 and 53 feet) and height (standard and high cube). Where possible, the loadicator (and its different modules) should be able to cater for these different sizes.

In our experience some of the shortcomings that have led to containers falling overboard in the past have been:

• Unapproved lashing equipment of lower strength in use;
• All four corners of the container not sitting properly on twistlocks;
• Twistlocks missing or not locked / left in open position;
• Lashings not tightened during the voyage;
• Lashing pattern as detailed in CSM not followed;
• Shortage of lashing equipment onboard leading to some containers not being lashed; and
• Securing (such as welded container sockets, lashing eyes etc.) and lashing equipment damaged or in poor condition.

Dangerous cargo: If any dangerous cargo (DG) containers are loaded onboard they must comply with the IMDG Code including such requirements pertaining to stowage, segregation and placarding.. Given the risks of fires in containers, owners / managers should consider implementing risk-based stowage that has been adopted by a number of container operators and incorporate it in the loading software used. Since the conventional bulk carriers are not equipped with smoke detection system for cargo holds, DG cargoes should not be loaded in the holds. If a fire were to break out, the crew should have been trained in how to respond to such an incident.

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Moorings: With containers loaded on deck the vessel's windage area will be significantly greater. This will result in higher stress on the vessel's mooring during her port stay as well as during towage in or out of the loading terminal. Owners will therefore need to consider, in consultation with the classification society and perhaps the port / terminal, if the mooring arrangement needs to be modified to ensure safety of operations during the port stay. The crew will need to be familiarised with the mooring arrangements prior to arrival at the load port. A revised 'equipment number calculation' by the classification society may be needed depending on whether owners are considering getting approvals for carrying containers permanently or not.

The voyage

Voyage planning: On a container vessel weather routeing is a very important part of the voyage planning process. Heavy weather, resulting in parametric and synchronous rolling, has been a common factor in nearly all claims related to container stack collapses which Gard has been involved in over the years. Readers interested in knowing more would find our insight ' Why do containership stacks collapse and who is liable? ' useful. Advanced weather routeing software and services are available, and operators should consider adopting these technologies for the safe execution of the voyage. Appropriate weather limiting factors must be defined or rather re-defined, such as the maximum wave and swell height, as these factors will be different depending on whether the vessel is carrying bulk cargo or containers.

Navigation:

• *Vessel manoeuvring*:Where containers are loaded on deck, the vessel's windage area will be greater. Consequently, the ship will behave differently at sea and during berthing and unberthing, especially when the wind speeds are high or there are strong gusts. Additional tugs may also be needed to assist vessel manoeuvring during berthing / unberthing operations. The watchkeeping officers should consider the higher windage area affecting the manoeuvrability of the vessel.
• *Lookout*:Containers loaded on deck can obscure visibility of the watchkeepers and interfere in safe lookout. The vessel's loading software should be able to advise the crew whether the SOLAS requirements for minimum visibility are being met or not.

Monitoring during voyage : During the voyage, the crew will need to actively monitor the lashings as they are likely to slacken during the voyage due to vessel movements. In addition to the lashings, the vessel will also need to monitor stability conditions during stages of the voyage. Bunker consumption during passage will affect the stability of the vessel which will need to be compensated with ballast, especially if the vessel has a low GM at departure from load port.

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Owner’s protective charterparty clauses

Keeping in mind the risks identified above, owners may wish to consider protective clauses in their charterparties and in bills of lading to mitigate the risks. The first thing to note is that the Hague/Hague-Visby Rules oblige the carrier to properly load, handle, stow, carry, keep, care for and discharge goods carried on board the vessel. The Hague/Hague-Visby Rules expressly excludes cargo carried on deck if:

• the contract of carriage expressly states that the cargo is to be carried on deck; and
• the cargo is in fact carried on deck.

Where the Hague/Hague-Visby exclusion applies, the carrier will not be able to rely on the defences available under Article 4 of the Hague/Hague-Visby Rules , including not being able to rely on the lower due diligence standard of seaworthiness. Owners should bear in mind that deck cargo is less protected than cargo stowed in cargo holds, and there is an increased risk of damage which owners could be responsible for. On the flip side, since the minimum standards in the Hague (Visby) Rules do not apply to deck cargo, the carrier is at liberty to exclude liability for unseaworthiness resulting in loss of deck cargo.

The 2019 case of *The Elin* deals with an exclusion clause in bills of lading where general cargo was carried on deck, and subsequently lost overboard due to heavy weather. The cargo interests argued that the cargo was lost as a result of the carrier’s negligence and/or unseaworthiness of the vessel. The bill of lading contained the following clause:

'loaded on deck at shipper’s and/or consignee’s and/or receiver’s risk; the carrier and/or Owners and/or Vessel being not responsible for loss or damage howsoever arising.'

The cargo interests argued that this clause did not have the effect of excluding liability for unseaworthiness and negligence, applying the case of R v Canada Steamship Line [1952] AC 192 which had been favourably applied by Courts in Singapore and Canada. The English Court however declined to apply R v Canada Steamship Line, instead holding that the words “howsoever arising” was sufficiently clear so as to extend to exclude liability for unseaworthiness and negligence.

Owners should therefore ensure that they incorporate clear and precise wording into the bills of lading issued on their behalf, and into their charterparties. These clauses ideally should specifically exclude unseaworthiness and negligence. An example clause could be:

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"Cargo is loaded and carried on deck entirely at Charterers' and/or Shipper's and/or Consignee's and/or Receiver's risk and responsibility; the Carrier and/or Owners and/or Vessel shall not be responsible for loss or damage to cargo carried on deck howsoever arising, including but not limited to unseaworthiness or negligence on the part of the Carrier and/or Owners and/or Vessel."

The owners should also seek an indemnity from charterers in respect of loss of deck cargo, as is the case in many standard form charterparties (see for example NYPE 1993 cl.13(b)), to protect them in circumstances where they become liable for a claim to which the terms in the bill of lading do not apply (for example, a claim in bailment, see further below).

Charterers' bills of lading – a solution?

Charterers' bills of lading are signed by charterers as the "carrier" of the cargo, and not on behalf of the owners or master of the vessels. The intended effect is to direct all claims made under the bill of lading to the charterers as the named carrier.

Be that as it may, the owners of the vessel as the physical carrier of the cargo, would be considered the bailor of the cargo during the voyage, with a corresponding obligation to properly care for the goods in their possession. Owners therefore could still face claims in bailment from a cargo claimant. These claims would be governed by the law of the jurisdiction in which they are brought and are difficult to avoid. Owners may wish to consider incorporating Himalaya clauses into the charterparty, as well as an indemnity from charterers into their charterparties, for claims arising from the carriage of containers on deck.

Insurance cover

Carriage of containers on dry bulk vessels will, as a general rule, constitute to be an alteration of risk for both P&I and H&M cover. Members should contact their underwriter to determine if the intended operation will have implication of the insurance cover. The risk evaluation by the underwriter will depend on the merits of each case and will take class and flag approval into account.

Recommendations

We have above highlighted some of the technical and contractual risks for bulk carriers that are involved in a transition to carry containers as cargo. The risks mentioned are by no means exhaustive but give some indications as to what to expect.The below recommendations summarize the key points.

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Due diligence of operators : Getting class and flag approvals after making the necessary modifications is only the first step when making a transition to carry containers. Approvals alone would not guarantee safe carriage. For example, crew must be trained and ready for the new operations.

Contractual considerations: It is prudent for owners to insert protective clauses and indemnity clauses in their charterparties and bills of lading where containers are intended to be carried on deck. Where charters' bills of lading are issued, Owners may still face claims in bailment. Owners should therefore ensure that their charterparties and bills of lading contain a Himalaya clause, allowing them to rely on any defences available to charterers as the contractual carrier under the bills of lading

Limitations of the container trade: There are a many lessons to be learned from container vessels for bulk operators wishing to make the transition. Misdeclaration of dangerous cargo, misdeclared weights, improper lashings and poor packaging and securing of the cargo inside the containers are some of the key risks to guard against.

Crew training and familiarisation: Crew who have not had any exposure to carrying containers will need to be trained and familiarized by operators to ensure that the voyage can be executed safely. Some of the areas where this will be particularly important are the loading software, container lashings and navigation.

Gard would like to thank Stephenson Harwood and class DNV for the legal and technical inputs in preparation of this insight.

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