BRITANNIA LOSS PREVENTION

B GUIDANCE

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LIQUID CARGO SHORTAGES

TANKER CARGO SHORTAGE CLAIMS CAN BE EXPENSIVE, AND THEY REPRESENT A MAJOR TYPE OF CLAIM THE CLUB FACES.

Cargo shortages can also lead to customs fines in certain jurisdictions.

The bill of lading (B/L) issued at loading contains the reference figure for the quantity of cargo shipped. Confirming the accuracy of this figure, along with any intermediate changes to cargo disposition is an essential part of defending cargo shortage claims.

In the Club's experience, a cargo shortage may be an actual physical loss of cargo or, in many cases, a 'paper' shortage where a difference in cargo figures manifests as an apparent loss of cargo.

Regardless of the cause of shortage, the ship is likely to be suspected and should be prepared to prove that the shortage was not because of any error or lack of care by the ship's crew.

CALCULATION ERRORS

CALCULATION ERRORS CAN OCCUR AT ANY STAGE WHEN CARRYING A TANKER CARGO.

Such discrepancies can have many causes. Most common are errors such as applying erroneous trim and list corrections, mistakes in applying petroleum correction tables, errors in cargo temperature measurement, and failure to correctly account for bottom line content. The use of incorrect API gravity or density values often supplied by the loading port after completion of cargo operations will also make a substantial difference to the final figures. Less common situations include tank volume data being no longer valid due to structural modifications, but these still must be considered and addressed when

they occur. The ship's crew must be provided with the most accurate tools and data to allow the best possible onboard measurement.

Additionally, inaccuracies can arise during cargo measurements taken while the ship is at an open berth and experiencing swell conditions, which affects the reliability of the readings. These inaccuracies, caused by the movement of the liquid surface inside the tank, often lead to measurement errors during cargo operations, particularly in ship-to-ship transfers and at single buoy moorings.

Shore measurement errors such as incorrect storage tank calibration, use of wrong line displacement quantity, or flow meter calibration errors can also contribute to differences between the ship's figures and those on the B/L.

The ship's cargo officer can minimise these issues through careful and independent cargo calculations, verified against those made by the cargo surveyor. Regularly comparing figures received or delivered with shore personnel could also provide early indication of a problem with shore distribution.

It is recommended that an experienced officer is physically present during tank gauging, to jointly agree on the readings with other cargo interests.

The officer on cargo watch should also cross-check their readings with fixed shipboard gauges throughout cargo operations to identify any issues quickly.

Proper consideration should be given to On Board Quantity (OBQ) at the port of loading, free water, line content, and any ullage port height corrections required as per the ullage table.

It is important to gauge and calculate the cargo on board at every change in cargo quantity, whether due to loading, discharging, or transferring of cargo. Such gauging and calculations should also include the gauging of non-nominated tanks. Equipment such as Ullage, Temperature, Interface (UTI) tapes should be properly calibrated in accordance with the manufacturer's recommended intervals and compared with a standard temperature gauge before use. Where possible the same UTI should be used throughout the entire cargo cycle, to minimise the effect of any equipment error.

Masters should issue a Letter of Protest (LOP) for cargo measurements taken under open berth and swell conditions.

DISCREPANCY BETWEEN A SHIP'S FIGURE AND B/L FIGURE AT LOAD PORT

EACH COMPANY WILL HAVE ITS OWN PROCEDURES FOR WHEN A DIFFERENCE IS FOUND BETWEEN SHIP AND SHORE FIGURES, AND THIS MUST TAKE PRECEDENCE.

A master must not sign a B/L that they know to be incorrect, although the nature of bulk oil measurement, makes perfect comparison impossible. It is therefore normal to accept a difference within an agreed allowance.

A commonly quoted allowance for signing the B/L is a difference of +/- 0.3%. In the case of oil tankers, the difference between the ship's figure and the B/L figure should be less than 0.3% after applying the Vessel Experience Factor (VEF).[1]

The master is advised not to sign the B/L if the difference exceeds 0.3% until the source of the discrepancy can be found. In such cases, the master should require re-gauging of the tanks, and they must inform the shipowner/manager and the charterer. The Club is also available to offer advice and recommend the attendance of suitably qualified surveyors as necessary.

For differences less than 0.3%, the master may sign the B/L under protest issuing a LOP after advising the charterer and the owner/manager. However, ship interests should be aware that some jurisdictions do not recognise any allowance.

TRANSIT LOSSES

CARGO TANKS CAN LOSE CARGO DUE TO VENTING TO MANAGE TANK PRESSURE DURING THE VOYAGE.

The atmosphere of the ship's cargo tank must be controlled in accordance with the Volatile Organic Compound (VOC) Management Plan on oil tankers. For product and chemical tankers, it is important to ensure that the Pressure-Vacuum (P/V) valves are in good condition and tested to operate at their designed pressure.

Charterers sometimes instruct vessels to arrive at the discharge port with less than 5% Hydrogen Sulphide (H_2S) content in the vapour space of cargo tanks due to terminal restrictions. Purging to comply with this request can result in transit loss of cargo. The master should verify that the terminal requirement applies to discharging tankers as well. The ship should maintain a log of purging, and the master should issue an LOP, holding the ship, owner, and manager harmless for any loss of cargo due to complying with the charterer's instruction.

FREE WATER FOUND AT THE DISCHARGE PORT

FREE WATER FOUND IN PETROLEUM CARGOES AT THE DISCHARGE PORT, ESPECIALLY WHEN NO WATER WAS FOUND AT THE LOAD PORT, COULD LEAD TO CARGO SHORTAGE CLAIMS FROM CARGO INTERESTS.

Masters should issue an LOP for any amount of water found at the load port, even traces, as this suspended water in the cargo will eventually settle. Masters should issue a standard LOP for insufficient settling time prior to measuring the cargo to protect the ship against any free water claim at the discharge port. Ship staff should sample free water to establish its source later. They should also take samples of seawater at the port as well as ballast water in the tanks. Analysing all these samples should help determine or prove if the source of the water is shore or ship origin.

CARGO REMAINING ON BOARD (ROB)

SEVERAL FACTORS CAN CONTRIBUTE TO THE ROB QUANTITY AFTER THE DISCHARGE OF CARGO.

One common reason for excessive ROB is insufficient heating of the cargo or a loss of temperature due to heat exchange with cold ballast in adjacent tanks. Additionally, defects in cargo pumping equipment and arrangements can significantly hinder efficient discharge, leading to high ROB. The presence of sediments in the cargo can also accumulate and prevent full discharge. Furthermore, an inadequate trim for efficient stripping or inability to conduct Crude Oil Washing (COW), can also contribute to ROB.

Ship staff should properly follow each cargo care regime from loading until final stripping to minimise ROB. They should maintain the cargo temperature according to the charterer's heating instructions. Some cargoes, like molasses, require a gradual increase in heating during the voyage. For cargoes prone to sediment, they should check sediment accumulation daily during the voyage, and they should perform recirculation of the cargo as required, with a log of recirculation maintained.

The crew should use the stripping arrangements[2] of the cargo pumping system effectively at the stripping stage to avoid any cargo ROB. Optimum trim is necessary for the final stripping of cargo tanks, and the ship should be guided by its COW manual or Procedures and Arrangements Manual as applicable. To determine the suitability of crude oil for COW operation, ship staff should consult their COW manual. The 'HM40' guide published by the Energy Institute, can serve as a good guideline for determining the COW cycle required for crude oils. If the terminal has limits on the allowable trim or doesn't permit/restricts COW, master's should issue an LOP. Good cargo planning may be required to avoid cargo cooling due to heat exchange with cold ballast in adjacent tanks. In the case of vegetable oils and molasses, good squeezing is required.

A dry tank certificate should be issued after the final discharge If carried out, squeezing should be clearly stated in the dry tank certificate.

OVER DISCHARGE

WHEN CARGO IS PARTIALLY DISCHARGED TO DIFFERENT TERMINALS OR TO DIFFERENT VESSELS IN SHIP-TO-SHIP OPERATIONS, OVER-DISCHARGE AND SUBSEQUENT INCORRECT CALCULATION COULD RESULT IN CARGO BEING SHORT DISCHARGED IN AN INTERMEDIATE PORT OR IN THE FINAL PORT.

The officer in charge of cargo operations should calculate a stopping ullage, considering cargo in the bottom line and discharge line. They should slow down and closely monitor using UTI tapes when cargo level gets close to stopping ullage.

DEFECTIVE PIPELINES OR CARGO EQUIPMENT

DEFECTIVE PIPELINES OR CARGO VALVES CAN RESULT IN UNPUMPABLE ROB IN THE CARGO TANK.

This may be due to the drawing in of cargo vapour, resulting in a loss of suction and preventing efficient discharge. Similarly, it can allow backflow of cargo into tanks previously considered empty.

The time allowed for stripping is often strict, and inefficiencies such as clogged pump suction strainers may result in stripping being suspended before all cargo remnants could be removed.

The crew operating the cargo system must have accurate and functioning pressure gauges for cargo pumps and eductors, otherwise they will be unable to properly optimise and monitor the discharging operations.

For the reasons above, the ship's crew must conduct the necessary tests, checks and maintenance as required by the company's PMS/SMS requirements.

To effectively minimise tanker cargo shortage claims, steps such as enhancing ship staff's knowledge of bulk liquid cargo characteristics and proper cargo care practices are essential. Concurrently, accurate cargo calculations and thorough documentation are vital to prevent "paper" shortages. Furthermore, maintaining cargo handling equipment and systems in excellent operational condition is paramount for the efficient discharge of cargo. Finally, the Club and our local correspondents stand ready to proactively assist masters in handling potential claims situations, providing vital support.

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[1] VEF is the historic average of qualifying ship-shore figure differences at the load port, expressed as a percentage.

[2] Automatic unloading system (AUS) and cargo eductors of the cargo oil pump (COP), or local stripping of submerged pumps such as Framo pumps.

FOR FURTHER INFORMATION

Members requiring any further guidance are advised to contact the Britannia Loss Prevention Department: lossprevention@tindallriley.com.

DISCLAIMER