



BRITANNIA LOSS PREVENTION

B GUIDANCE

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MANAGING BUNKER QUANTITY DISPUTES

ESSENTIAL PRACTICES AND CONSIDERATIONS FOR SHIPOWNERS AND OPERATORS

Bunker quantity disputes pose a common challenge in the maritime industry, arising from disagreements between the supplier and the receiver regarding the amount of bunker fuel delivered. These disputes can lead to significant operational and financial consequences for shipowners and operators.

DELIVERY METHOD

THE MOST COMMON METHOD OF BUNKER DELIVERY FOR OCEANGOING SHIPS, INVOLVES DELIVERING FUEL VIA A BARGE FROM THE SUPPLIER'S STORAGE TO THE RECEIVING SHIP.

While this method is widely used because of its flexibility and convenience, it is not without its pitfalls, including discrepancies in measurement. Receiving bunkers via shore pipeline or truck also presents unique challenges.

Shore pipelines offer a more direct and potentially quicker method of delivery, but they come with certain operational risks. In the event of a quantity dispute, the ship's crew may find it more difficult to conduct or participate in the investigation, as they are generally not granted access to observe shore tank measurements. The ship's interests must then rely on the appointed surveyor, during such occurrence. To address this, some terminals that frequently engage in bunkering have opted to install flowmeters which are used as the primary reference for transfer measurements.

Truck deliveries, often utilised in smaller ports or for specific fuel types, require careful oversight to ensure the fuel's quantity and quality meet the necessary standards.

This article will primarily focus on delivery by barge, although many concepts will be equally useful when applied to other methods.

KNOWING THE SUPPLIERS

ESTABLISHING A RELATIONSHIP WITH REPUTABLE SUPPLIERS IS OF BOTH OPERATIONAL AND COMMERCIAL IMPORTANCE.

Reliable suppliers are more likely to adhere to agreed-upon standards and are easier to work with in resolving any disputes. Always conduct due diligence by researching potential suppliers' track records, this may include any concerns regarding the terminal that they are operating from and seeking recommendations from industry peers. Additionally, be wary of any restrictive clauses that may place shipowners at an unfair disadvantage.

QUANTITY DISPUTES

RESOLVING DISPUTES TYPICALLY INVOLVES VERIFYING QUANTITIES THROUGH RE-MEASUREMENT, CROSS-CHECKING DOCUMENTATION, AND SOMETIMES ENGAGING THIRD-PARTY INSPECTORS/EXPERTS.

The stakes are high, as small differences in measured quantities may lead to significant financial impact. To mitigate these risks, industry practices include precise measurement verification techniques, thorough documentation, and the progressive utilisation of technologies like Mass Flow Meters for more accurate readings.

OPERATIONAL CONSIDERATIONS

Before initiating the bunkering operation, owners/ships should verify and reasonably ensure compliance with the following:

- **Confirmation of bunker details:** The ship should confirm with the owner's office and/or charterer the specific grade and quantity of bunkers to be received, including the identity of the bunker supplier/barge (by IMO identification).
- **Bunker plan:** The ship should develop a thorough bunker plan, which includes details such as the bunker tank(s) to be used (always aim to load into empty bunker tanks), the sequence for filling the tanks, allocations for different grades of fuel, transfer rates, procedures for topping up and the condition of the fuel oil overflow tank (typically kept empty during bunkering operations). In some cases, the bunker plan must be approved by the shipping company before bunkering can proceed.
- **Compliance with Safety Management System (SMS):** Adherence to the owner's SMS procedures for bunkering, including the completion of thorough risk assessment prior to the operation.
- **Pre-bunkering meetings:** Conduct pre-bunkering meetings to align the ship's crew internally and another involving the bunker barge's crew, which includes the preparation and completion of a bunker checklist. The ship must confirm the agreed pumping rate with the bunker supplier to prevent misunderstanding and ensure a controlled bunkering operation.

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- **Tank calibration and sounding:** Ensure valid tank calibration and sounding tables are available to facilitate tank calculations and figure reconciliation, which may involve a third-party inspector.
- **Bunker survey:** Consider including the nomination of a bunker surveyor/inspector as a requirement in the charter party terms to independently verify the quantities delivered and received by the barge and vessel. These should fall within an acceptable tolerance, typically set at 0.5% or as otherwise commercially agreed. In cases of quantity discrepancies, the surveyor should conduct an independent investigation to determine the cause of the discrepancy and assist with the sampling and sealing.
- **Recording of bunkering events:** The ship should document all relevant/significant events during the bunkering operation, including start/stop times, flow rates and any unforeseen stoppages.

FIGURES RECONCILIATION (PRE-BUNKERING, DURING & POST-BUNKERING)

Bunker figure reconciliation primarily involves tank sounding and temperature measurements. It is vital for all parties to ensure that this process is conducted properly.

- **Preparation and inspection:** A ship's representative should board the bunker barge to verify tank quantities alongside the supplier's representative. All bunker tanks (including slop tanks) should be sounded on the barge both before and after bunkering operations to ensure there is no 'cargo passing'. Visual drafts of the barge and ship should also be taken before and after bunkering.
 - **Sounding pipes:** The reference and measured heights of individual tanks should be gauged for comparison. This serves as a fundamental check against tampering or unauthorised alterations that could result in cargo measurements that are inaccurate. Additionally, remain alert to any unusual piping configurations on the bunker barge and highlight them to the surveyor/expert (if appointed), as these may also indicate anomalies that could affect the bunkering operation.
 - **Gauging equipment:** Only use gauging equipment (e.g. sounding tapes and portable thermometers) that have a valid calibration certificate. Inaccurate temperature measurement can lead to significant discrepancies in measured figures when Volume Correction Factors are applied.
 - **Correction Factor tables**
We recommend that the latest Volume Correction Factor (VCF) and Weight Correction Factor (WCF) tables are used as these aim to incorporate updated data and improve accuracy, making them preferable for precise calculations. Both the ship and the barge should ideally use the same version of the VCF/WCF tables to avoid discrepancies in calculations.
- Then, commercially, it must be decided which figures to use for billing purposes. Typically, the supplier's barge figures are used unless otherwise agreed upon. Please see below the appropriate tables to be used:
- VCF for M3@Obs Temp to M3@ 15°C: ASTM Table 54B**
WCF for M3@15°C to MT (in air) : ASTM Table 56
- **Monitoring and documentation:** Compare the supplied and received figures often during the bunkering operation to promptly identify significant variances, which could signal operational issues or malpractice. Visual drafts of both the ship and bunker barge before and after the operation should correspond to the displacement after the bunker is delivered. Where possible, make the ship upright and even keel for final measurement, otherwise apply accurate trim/list corrections. Use only the density provided in the Bunker Delivery Note (BDN) for final calculations.
 - **Additional precautions:** If the chief engineer finds the results unsatisfactory, a Letter of Protest must be issued, clearly stating the reason (e.g. foam observed - Cappuccino Effect, see below), and an entry made in the engine logbook to document the concern. Double check all bunker tank soundings after half a day of receiving the bunker. In cases of doubt or suspicious circumstances, do not sign the BDN. Instead, promptly contact the owners, charterers, and/or the local Club's correspondent to determine the next course of action.

Implementing these practices assists in transparency and accuracy throughout the bunkering process, safeguarding against potential discrepancies and fostering trust between parties involved. In regions where the use of Mass Flow Meters (see below) is not mandatory, the importance of manual sounding during bunkering operations for intermittent figure comparisons cannot be overstated.

GENERAL PRECAUTIONS FOR BUNKERING OPERATIONS USING MASS FLOW METERS (MFM)

MASS FLOW METERS (MFM) ARE MANDATORY FOR MEASURING FUEL SUPPLY IN SINGAPOREAN WATERS, WITH DISCUSSIONS ABOUT THEIR ADOPTION IN OTHER MAJOR SHIPPING HUBS LIKE THE AMSTERDAM-ROTTERDAM-ANTWERP (ARA) REGION.

To ensure compliance and accuracy during bunkering operations using MFM, consider the following precautions:

PRE-DELIVERY CHECKS:

- Ensure the seals of the MFM system (including transmitters, pipe flange, and blanks) are intact and show no signs of tampering. Record resettable and non-resettable totaliser values. Request a copy of the 'Mass Flow Metering System Seals Checklist' or its equivalent for your records
- Verify the match between the seal verification report and the actual physical seals
- Confirm that the MFM is still valid and calibrated according to local regulations. It is within the ship's rights to request a calibration validity certificate from the supplying barge
- Be aware of local regulations and any mandatory updates to them. In case of doubt or suspicious circumstances, it's advisable to contact the local Club's correspondent

DURING BUNKERING:

- Record the MFM meter reading before and after the bunker operation. Request a copy of the 'Meter Reading Record Form' or its equivalent for your records
- Perform manual sounding/ullaging at a frequent rate throughout the bunkering operation, even when using MFM. Comparing the quantity indicated by the MFM with the manual soundings may assist in promptly identifying any discrepancies or potential malpractices. This also serves as a risk mitigation strategy to prevent tank overfilling, which could lead to costly oil spills and the associated clean-up.

POST-BUNKERING:

- Recheck the seal after the operation to ensure there has been no tampering. The seals pre- and post-delivery should match. Record resettable and non-resettable totaliser values
- Obtain a copy of the Bunker Meter Ticket and the BDN from the supplying bunker barge. These documents would form part of the standard documentation of bunkers by MFM.

CAPPUCCINO EFFECT

THE “CAPPUCCINO EFFECT” REFERS TO A DECEPTIVE PRACTICE WHERE COMPRESSED AIR OR GAS (E.G., NITROGEN) IS DELIBERATELY INTRODUCED INTO THE BUNKER FUEL BY THE SUPPLY BARGE.

This action artificially inflates the volume of the fuel, affecting the accuracy of volumetric measurements. As a result, the actual quantity of fuel received is less than recorded and may not become apparent until days or weeks after the operation.



Remaining vigilant is key to identifying and mitigating the risks associated with the Cappuccino Effect. The following signs may help in recognising such instances during bunkering operations:

- **Foam presence:** Inspect for foam on the surface of the fuel oil within the bunker barge tank before bunkering and in the ship's tanks after delivery. This can be observed through tank or ullage hatches. Additionally, check the sounding tape and brass bob (weight) for the presence of bubbles after immersion, as they may also indicate the presence of air or gas mixed with the fuel.
- **Sound anomalies:** Listen for rattling sounds emanating from air vents or an unusual volume of air escaping from vent heads on deck or gurgling sounds from the manifold.
- **Manifold pressure fluctuations:** Monitor and be alert to fluctuations in manifold pressure that deviate from expected levels.
- **Physical hose behaviour:** Observe the bunker hose on deck for any signs of vibrating, jerking or other unusual noises, which may indicate the passage of air or gas through the hose.
- **Evidence collection & documentation:** Clear visual evidence, such as photographs or videos, is recommended to be included in the documentation. A Letter of Protest should be issued, clearly stating the reasons for concern. Additionally, an entry must be made in the engine logbook to document the issue. By ensuring a thorough and well-documented evidence collection process, it may play a pivotal role in strengthening their case against the alleged malpractice.

TANK CAPACITY CHANGES

VERIFY IF ANY MODIFICATIONS HAVE BEEN MADE TO THE BUNKER TANKS.

Such modifications can affect tank capacity and measurement accuracy. If any structural changes to the tanks have taken place, confirm that the tank capacity tables have been updated accordingly to reflect the changes following a tank recalibration survey.

Conduct regular internal inspections of bunker tanks, ensuring they meet your company's standards. Confirm that no improper or unplanned alterations have occurred and remove any detritus. Document the findings clearly and maintain good records. Ensure that any recalibrations are communicated to the relevant authorities for necessary actions and reflected in the appropriate documentation (e.g., classification society approvals, additional required tests, updates to the ship's general particulars, and other documentation).

WHEN NO SAFE ACCESS TO BUNKER BARGE OR IF UNABLE TO SOUND TANKS

IN CASES WHERE BUNKER MEASUREMENT VERIFICATION CANNOT BE SATISFACTORILY DONE, IT IS ADVISABLE TO FORMALLY RESERVE THE SHIP'S RIGHTS BY ISSUING AN OFFICIAL LETTER OF PROTEST.

This includes situations such as the inability to witness tank gauging or inspect the integrity of seals within the barge's line system, ensuring it has been permanently blinded to prevent any flow back to the barge's tanks, particularly when employing a mass flow meter system.

FREE WATER FOUND AFTER BUNKERING

IF NO FREE WATER WAS FOUND IN THE SHIP'S BUNKER TANKS BUT IS DETECTED AFTER BUNKERING, IT MAY AFFECT THE ACTUAL RECEIVED FIGURES IF NOT PROPERLY EXCLUDED.

The ship's crew may use water-finding paste to detect water, but short bunker settling times often make it insufficient or inconclusive. Any findings must be promptly reported to the shipowners/operators for their operational and commercial considerations.

SHORTAGE DOCUMENTATION AND REPORTING

OFFICIAL ON BOARD DOCUMENTS LIKE THE LOGBOOK AND OIL RECORD BOOK SHOULD ALWAYS REFLECT THE ACTUAL AMOUNT ON BOARD.

Failure to do so may cause issues with customs and other authorities.

If the chief engineer disputes the supplier's amount on the BDN, he should issue a letter of protest and note this discrepancy in the logbook and oil record book accordingly.

DURING COLD CONDITIONS

DURING LOW TEMPERATURES, OBSERVED DISCREPANCIES MAY BE RELATED TO THE BUNKER FUEL'S PROPERTIES AND STORAGE CONDITIONS, ESPECIALLY WHEN HEATING FACILITIES ON BOARD ARE NOT FUNCTIONING PROPERLY.

If the oil level in the sounding pipe does not move correspondingly when the ship's trim is adjusted, it may be due to the oil being stored below its pour point temperature (the temperature below which the liquid loses its flow characteristics).

To avoid this, heating is required. However, prolonged storage at high temperatures may destabilise the fuel and cause other quality issues. The way to resolve this matter is to heat the oil well above the pour point. If this is not feasible, the dispute may need to be resolved through other commercial means.

EVIDENCE COLLECTION AND PRESERVATION

TO PROTECT THE SHIP'S INTERESTS AND FACILITATE EFFICIENT PRELIMINARY INVESTIGATIONS ABOARD, RECORD KEEPING IS OF PRIME IMPORTANCE.

It is not possible to cover every scenario due to the diverse and complex nature of disputes, however all paperwork, logbook entries, survey reports, video/pictorial evidence, and samples should be retained in line with company or regulatory policy.

By understanding the common pitfalls in bunker quantity disputes and implementing best practices, ship interests can minimise the risk of disputes and ensure smooth bunkering operations.

In all cases, if in doubt or suspicion of any malpractice or concerns about the quantity and quality of provided bunker, please contact the P&I Club's local correspondent immediately for further advice.

FOR FURTHER INFORMATION

For further information, please do not hesitate to email lossprevention@tindallriley.com.

DISCLAIMER

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