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Speakers: **Pedro Nunes**, Lawyer and Claims Handler
Jorge Díaz, Head of Business Development

Liquid bulk cargoes

Handling, storage and potential claims

IUMI Webinar 2024

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1. Introduction to Liquid Bulk Cargoes

Liquid bulk cargo refers to large quantities of liquid commodities that are transported in bulk form rather than in containers.

Some **common types** of liquid bulk cargo are:

- ➔ Petroleum and its byproducts: Crude oil, gasoline, diesel, jet fuel, and lubricants.
- ➔ Chemicals: Acids, alkalis, solvents, and other industrial chemicals.
- ➔ Food-Grade Liquids: Edible oils, juices, wine, milk, and other beverages.
- ➔ Gases (in liquefied form): Liquefied natural gas (LNG), liquefied petroleum gas (LPG).
- ➔ Other Liquids: Molasses, liquid fertilizers, and certain types of liquid waste.

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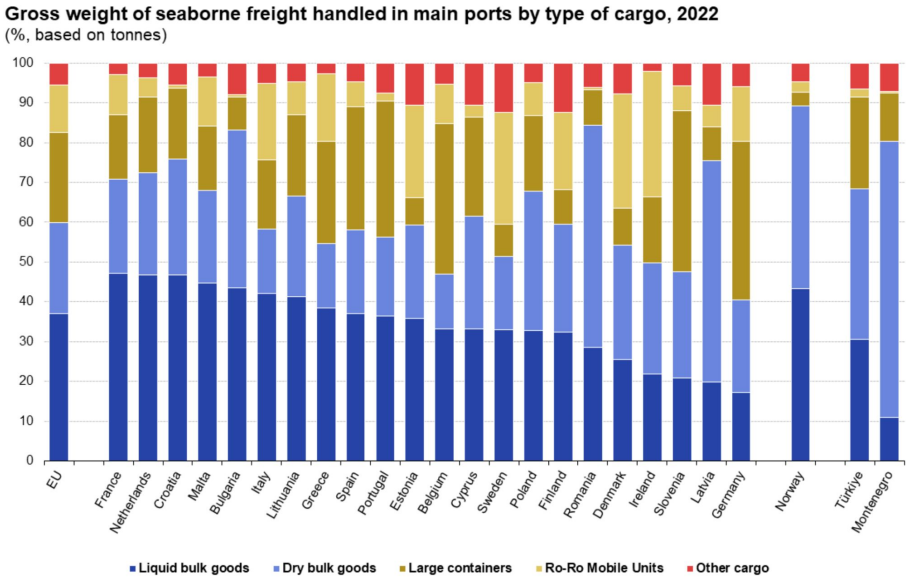
Key points on the importance of liquid bulk transportation in global trade

- Utmost importance in global trade: critical for industries such as energy, chemicals, and food and beverage.
- In terms of its share in the transportation market, in 2022, liquid bulk made up 37.0 % of the total cargo handled in the main EU ports.
- Cost-effective solution.
- More hazardous: The packaging, handling, transportation and storage of liquid bulk cargoes pose a challenge that dry bulk cargo usually do not, given the own nature of the liquids that are being transported.
- Specialised knowledge and compliance to prevent or reduce any liquid bulk cargo losses and mitigate their impact.



Source: Eurostat - Gross weight of seaborne freight handled in main ports by type of cargo, 2022 (% based on tonnes)

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2. Storage Requirements

- **Specific Tanks design**
- **Tanks' material/coating**
- **Temperature and pressure control**
- **Cleaning**

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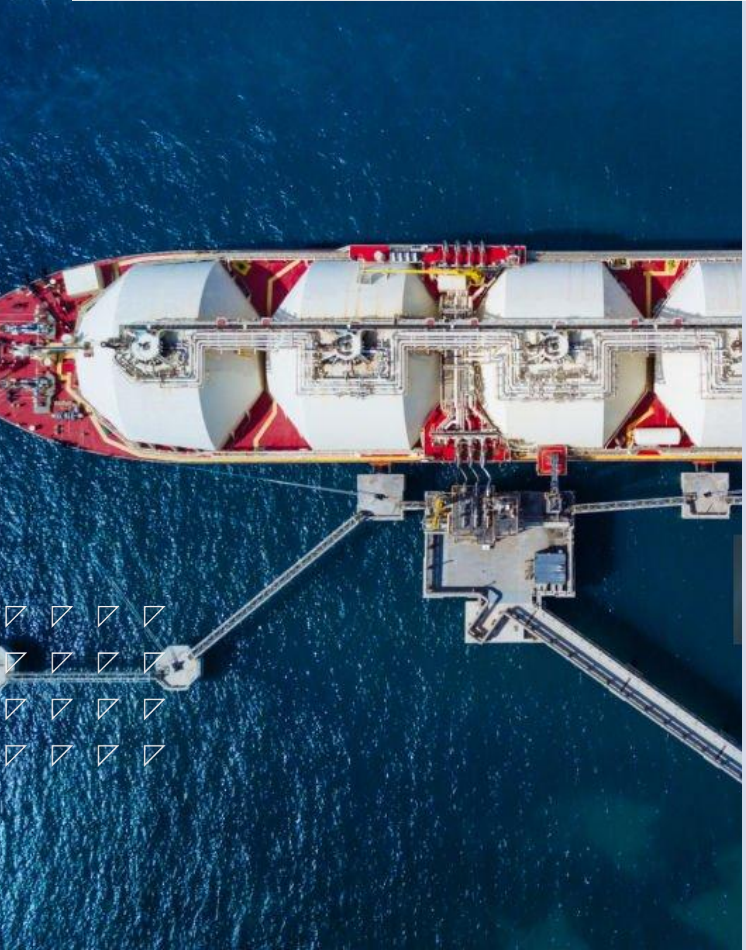

3. Handling Requirements

- **Loading and Unloading: complex piping system**
  Separate handling process for each type of cargo, as any mixture would likely lead to a total loss.

- **Temperature Control**
  Some liquids require temperature control during handling. Heating coils or cooling systems might be used to maintain appropriate temperatures.

- **Safety Measures: Trained personnel**
  All personnel have the necessary training to handle the liquid in order to avoid any losses related to human-negligent actions.

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4. Shortage Claims

Discrepancy between the quantity of cargo noted on the B/L (Bill of Lading) and the quantity discharged.

Most common causes:

- **Measurement inaccuracies (paper losses)**
  Also common that Ullage | Draft Surveys conducted by different parties shows different results.

- **Evaporation & Leakage**
  Usually due to the own nature of cargo, although can be exacerbated by improper sealings.

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Methods to determine the amount of liquid cargo on tanker ships

Ullage method

Measures the space between the surface of the liquid in a tank and the top of the inner surface of the tank.

Usually, ullage is measured when the content of a tank is highly viscous and/or if the tank is filled to/near the maximum.

Sounding method

Measures the depth of the liquid by measuring the distance between the surface of the liquid to the bottom of the tank. Used to calculate the volume of liquid present in the tank.

Volume calculation

In both methods, by knowing the empty space (ullage) or the liquid depth (sounding), the volume or weight of the liquid cargo in the tank can be determined through static calculations.

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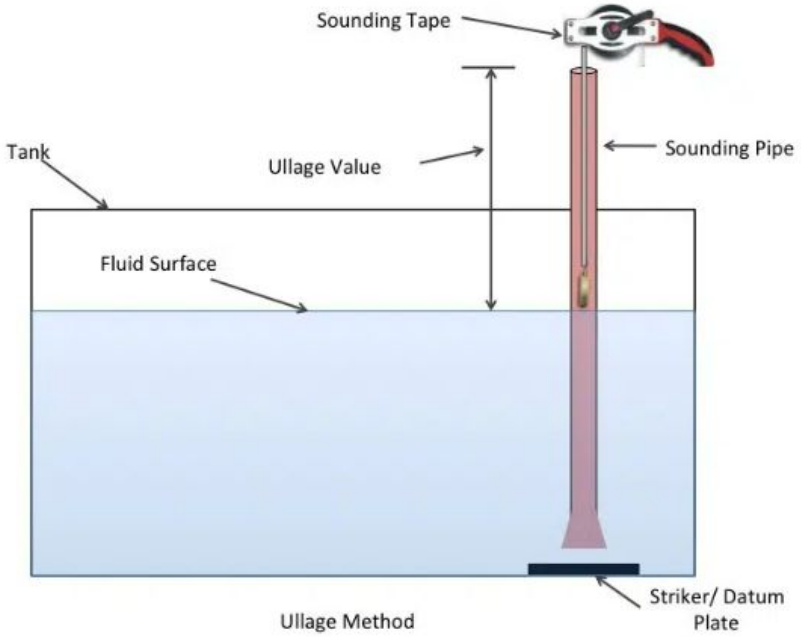

Illustration of measuring the level by calculating the Ullage of the tank. The sounding tape is inserted until it touches the fluid's top surface, measuring the free space from the top of the sounding pipe to the liquid surface. This method is particularly useful for high-level fluids, heavy oil tanks, and viscous fluids, as it prevents contamination of the sounding tape and avoids false readings. Source: Marine Insight

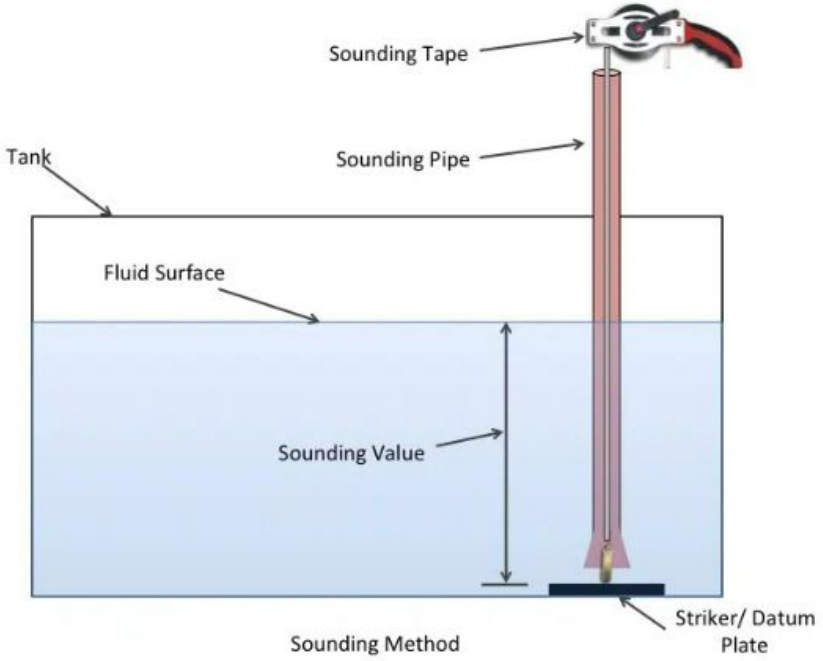

Diagram illustrating the sounding process on a ship, where the depth of the liquid in the tank is measured from the liquid surface to the bottom of the tank using a sounding pipe and datum plate. Source: Marine Insight

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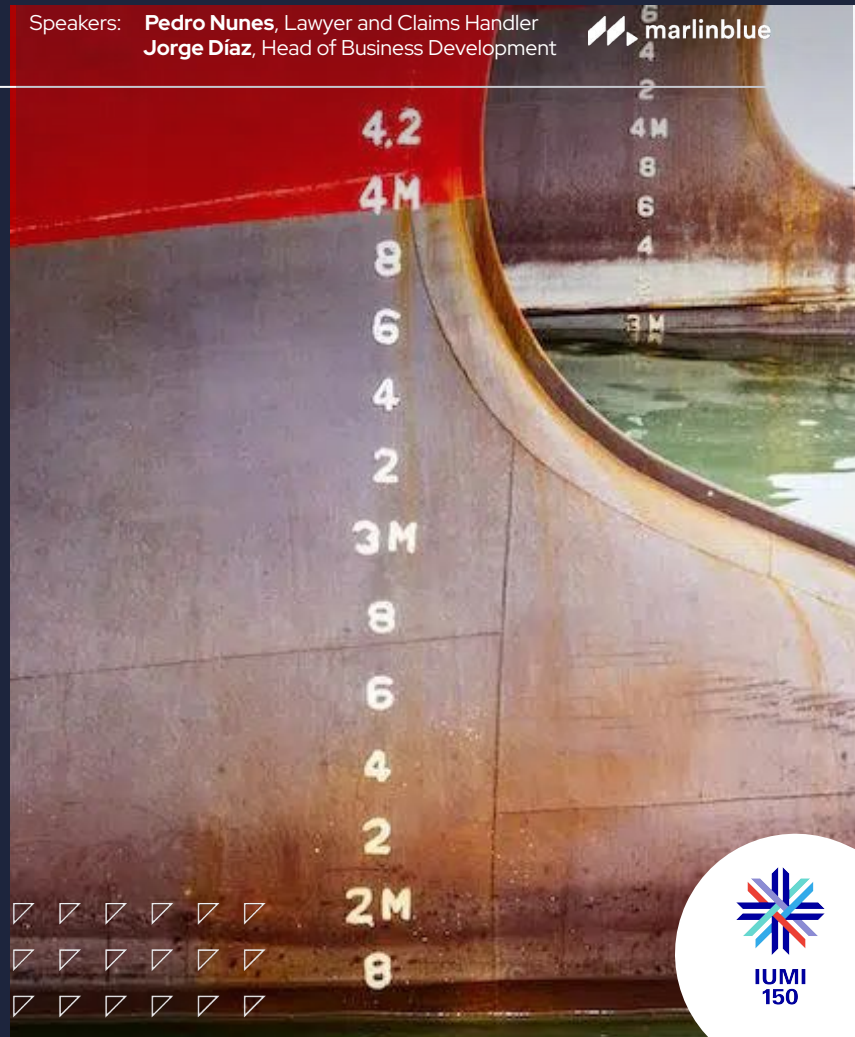
Draft survey

The vessel draft survey measures the displacement of the water both before and after the loading or unloading, with the resulting difference between the two displacements representing the weight of the cargo.

It is crucial that a Draft Survey is conducted at both the loading port and discharging port (and at intermediate ports) **and by all parties involved/interested** (cargo owners, shipowners, insurers, etc.) **due to it margin of error in readings.**



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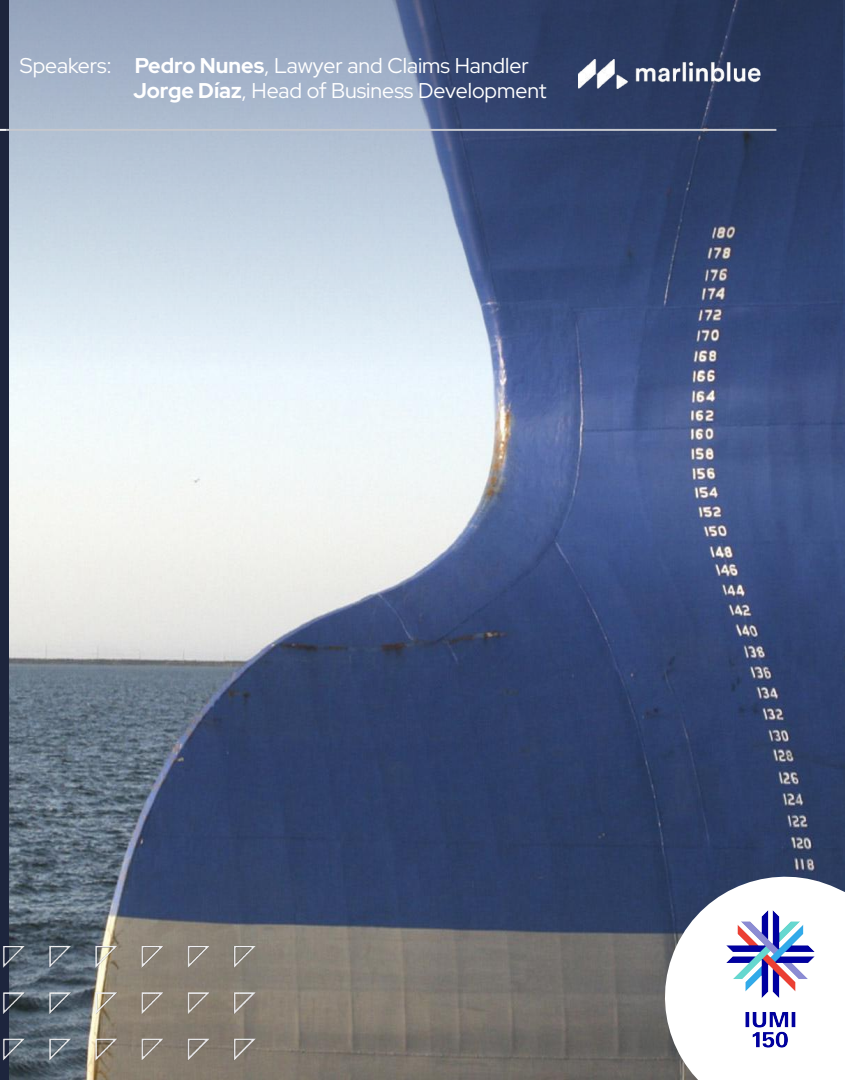
Conditions that affect when reading the draft:

- **Water density** of the sea, river or other waterway
- **Changes in the ballast** quantity between initial and final draft readings
- Changes in the **vessel's consumables** (e.g. fuel oil, drinking water) between initial and final draft readings
- Trim and deformation **corrections**
- Sea condition (waves and swell)
- Hogging and sagging

Hogging

Sagging

If the above-mentioned conditions are not read/interpreted correctly may lead to a larger/shorter discrepancy.



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Methods for measuring liquid cargo in shore tanks

Flow meter measurement

Uses flow meters installed in the pipelines between shore storage tanks and vessels to measure the volume or mass of liquid cargo passing through the pipelines.

Common use: Allows for the calculation of **the weight of the cargo** transferred between shore tanks and vessel tanks.

Use of ullage and sounding methods on shore

Ullage and sounding methods can also be applied to shore tanks to measure the amount of stored liquid.

Be aware: When the discharged quantity of liquid cargoes is determined by the capacity of shore tanks, **shortages may be caused when cargo remains in the pipeline between the vessel and the shore tanks.** In this case, a measurement before discharge and an empty certificate would benefit vessel's/carrier's interests.

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Trade Allowance: the acceptable shortage percentage

It is a commercial practice that has been widely accepted by stakeholders and Courts.

Purpose

Corrects measurement inaccuracies/errors within a reasonable percentage. It accounts for minor variations in cargo measurements that may arise due to differences in measurement techniques, equipment calibration, or handling losses during loading and unloading processes.

Negotiation and agreement

- Stakeholders can and should agree on a trade allowance for the specific cargo and voyage, to avoid disputes and ensure clarity for both parties.
- Only when contractually agreed will a trade allowance be binding.

Be aware: This allowance differ depending on the the governing laws, the countries, and courts. In some countries no allowance is accepted.

Trade allowances are usually expressed as a percentage of the total cargo quantity. **Common ranges are between 0.5% and 1%,** depending on the type of cargo and industry standards.

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VEF - VESSEL EXPERIENCE FACTOR QOB & ROB

The Vessel Experience Factor (VEF) is an important metric used in the maritime oil transportation industry to account for discrepancies between the quantity of oil loaded and the quantity discharged.

Formula: VEF = (Total Volume Discharged) / (Total Volume Loaded)

- ➔ It helps to ensure accurate reporting and reconciliation of cargo quantities, minimizing disputes over shortages or overages.
- ➔ Used to adjust the Bill of Lading quantities for more accurate reporting.
- ➔ Often a requirement in charter party agreements.

Quantity On Board (QOB): Refers to the total measured volume of oil cargo on board the vessel at the loading port **before the start of loading operations**

Remaining On Board (ROB): Refers to the quantity of oil cargo that remains on board the vessel **after the discharge operations are completed**

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5. Contamination Claims

One of the primary causes for liquid bulk cargo claims.

Cargo contamination can occur at any stage of transportation, from the pre-loading phase to post-discharging. Liquid bulk cargoes have stringent specifications, and any deviation from these can result in significant losses and subsequent claims.

Most common causes:

- ➔ Inadequate coatings or materials for specific cargo types.
- ➔ Lack of cleanliness of tanks, pipelines, pumps and valves. This issue can be related to the ship itself or to shore facilities such as tanks and pipelines.
- ➔ Cargo admixture.

Key actions in contamination losses/claims prevention

Cleanliness

Essential to prevent residues from previous cargo, and the contamination of the subsequent cargo being loaded/discharged.

Different cargoes may require different cleaning methods

Sampling

Multiple sampling is crucial to determine who is liable for the contamination.

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Cleanliness

1st step: **Cleanliness requirements**

Establish the cleanliness required for the "next cargo" and the cleaning methods required to clean and remove any "previous" cargo residues. The requirements vary depending on previous and next cargo.

"Guidelines" as to standard requirements to be taken into account.

Advise: Notwithstanding guidelines, it is advisable that parties (shipper, Charterer, Shipowner, Carrier) agree in advance the Cleanliness requirements.

2nd step: **Cleaning**

Undertake adequate cleaning procedures as established previously that ensures a tank that is: clean, dry and visually free of residues of previous cargo and/or foreign matter, no uncharacteristic odour.

3rd step: **Cleanliness Certification**

Inspect and certify that the required level of cleanliness is achieved (Visually Clean Standard, Water White Standard, High-Purity Standard, Ultra-High Purity Standard)

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Cleanliness standards guidelines

In case no pre-loading agreement is reached it is common practice, and considered to be industry best practice, to attain to guidelines usually provided by:

- Major companies usually have their guides on cleaning procedures for each type of cargo.
- Independent experts/organization, for example:
  - Energy institute guidelines: (i.e. HM50 Guidelines for the preparation of tanks and lines for marine tank vessels carrying petroleum and refined products).
  - Dr. Verwey's Tank Cleaning Guide .
  - INTERTANKO Cargo Tank Cleanliness Standards for Chemical Tankers.
  - Federation of Oils, Seeds and Fats Association (FOSFA) Guidelines for cleanliness and accepted and forbidden previous cargoes.

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An illustrative example of cleanliness guidelines for tank preparations.

Following a BP Tank Cleaning Guide:

Let's assume the next cargo is to load leaded motor spirit in a tank that previously carried avgas.

The table shows a gray color for this scenario,indicating that **no washing is required, just strip and drain well** (included components, such as pumps and deck lines) to remove any residues that could affect the leaded motor spirit.

Source: BP Tank Cleaning Guidelink

Cargo to be Loaded \ Previous Cargo	Naphtha / Clean Condensates / LDF	Avgas	MTBE/ETBE/TAME/Ethanol/Methanol	Leaded Motor Spirit	Unleaded Motor Spirit	Sulphur Free Motor Spirit	Solvents	Jet / Aviation Kerosenes	Kerosenes (undyed)	Kerosenes (dyed)	Gas Oil (undyed)	Gas Oil (dyed)
Naphtha/Clean Condensates/LDF ★												
Avgas												
MTBE	M	M						M	M	M	M	M
Ethanol/Methanol	M	M						M	M	M	M	M
Leaded Motor Spirit												
Unleaded Motor Spirit												
Sulphur Free Motor Spirit ★												
Solvents ★	PM	PM	PM	PM	PM	PM				PM		PM

No washing required - strip and drain well
Refer Notes: 1 & 2

Notes:
1. Tanks to be stripped dry such that any liquid ROB is confined to the pump well - or better.
2. Pump columns, deck lines, drops etc are to be blown clear and drained free of all product and water.

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Sampling

It is essential to collect multiple samples throughout the entire process. Even with proper cleaning operations, contamination may still occur.

- Sampling should be **conducted by an appointed surveyor at both loading and discharging ports**, as well as at various points throughout the loading and discharging process.
- It is beneficial to conduct joint sampling with **the presence of all interested parties.**
- **An independent laboratory** should analyze the samples.
- Proper **labelling and storage** of samples
- Follow **guidelines from recognized organizations** such as the American Petroleum Institute (API) and the International Standards Organization (ISO) for best practices in quality and quantity measurements.

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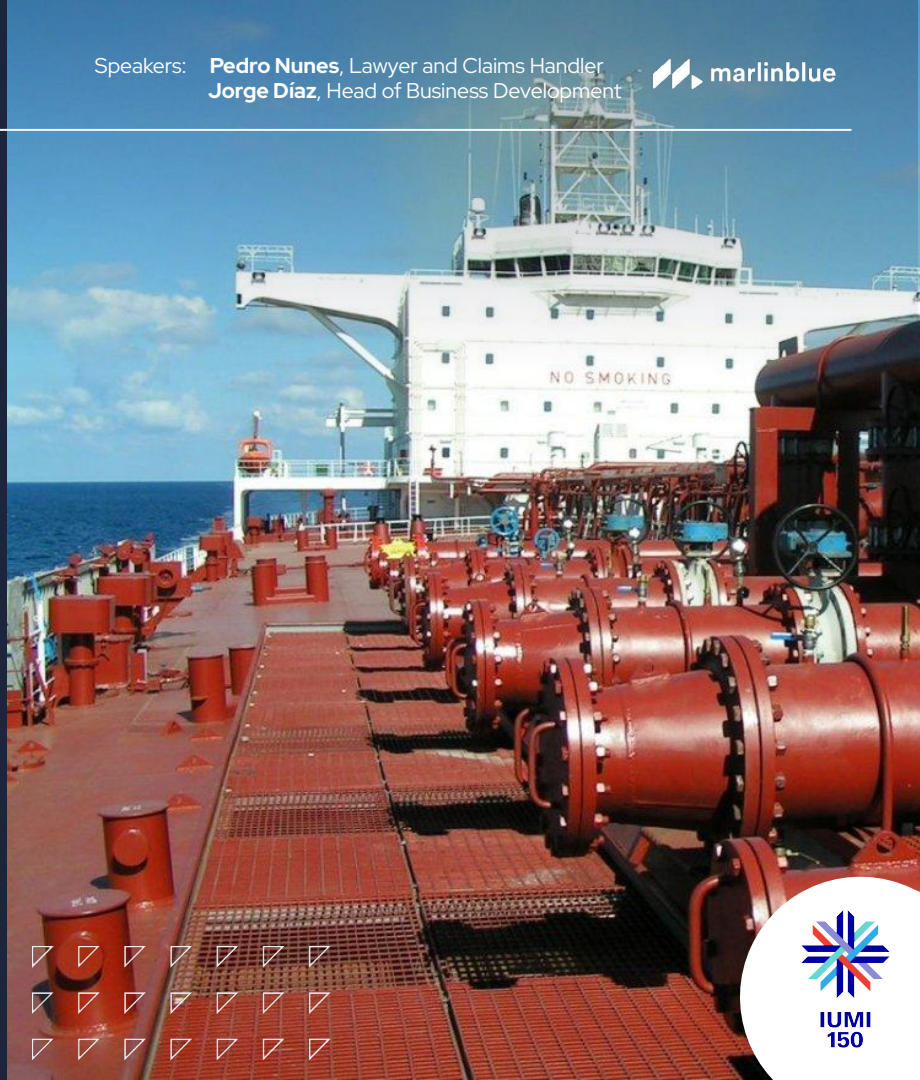
Sampling at loading port

- Shore tank sampling
- Jetty manifold sampling.
- Shipboard manifold sampling.
- First foot samples in cargo tanks.
- Completion of loading samples.



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Sampling at discharging port

- Pre-discharge samples.
- Shipboard manifold sampling before discharge.
- Shore tank sampling before and after discharge.

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6. Risk Assessment & Loss Prevention

What to do when faced with potential or actual losses?

- Immediate **Notification**

  Start the notification process as soon as you become aware of any loss or damage.

  Alert all relevant parties including your insurance companies, carrier, and any other involved parties.

- Send a **Surveyor**

  Evaluate the cause and extent of the loss or damage.

- Gather **Relevant Documents** (see next slide)

- **Protest Letter**

- Submit **Claim**

- Loss **mitigation and salvage**.

  Take immediate steps to secure and protect the remaining cargo.

- Seek **Legal Advice** (i.e. Arresting Vessel)

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6. Risk Assessment & Loss Prevention

Essential documents to face potential or actual claims

- Original **Bill of Lading** (with both front and reverse sides)
- Copy of Charter Party
- Relevant **contracts/agreements**:
  - Sales contract including specification evidencing terms of sale
  - Storage terminals contracts
  - Agreements on trade allowances, cargo and cleaning specifications
- **Commercial invoice**
- **Survey reports** (at loading and discharging ports) covering:
  - Cleanliness (Ship and Shore tanks and pipelines)
  - OBQ | ROB or empty certificate
  - Shore tank measurements
  - Ship measurements
  - Sampling and results (certifying that cargo is not off-spec at any point)
  - Last cargoes loaded (in both shore and ship tanks)
  - Vessels experience factor (V.E.F.)
- **Letter of protest** if any discrepancies
- **Notice of loss / Claim notification** to any interested parties (Shipowners, Charterer, Cargo insurers, etc.)
- **Loss adjustment & mitigation assessment**

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Legal Aspects I

- ➔ Hague-Visby Rules (HVR): applicable rules clauses in Bill of Lading (BL) & Charter Party (CP)
- ➔ Be aware of other regulations: Hamburg Rules, Local rules
- ➔ Under HVR (art. 3):
  - The Carrier/Shipowner is bound to make the ship seaworthy and cargoworthy
  - The carrier should check the condition and quantity of the received cargo, adding the relevante remarks
  - in "Straight BL": The BL is prima facie evidence of reception of the cargo in good order (as stated in the BL)
  - in "To Order BL": Proof to the contrary shall not be admissible, and the BL is considered conclusive evidence as to its figures
  -
- ➔ Ship's manifold: delineates the carrier's period of liability
- ➔ Entitlement to claim: the lawful holder of the BL (usually the consignee) - Subrogated Insurer

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Legal Aspects II

- If quantity mentioned in the BL is disputed:
    - Carriers can include formula: "*weight, quantity, marks, numbers, quality, contents and value unknown*"
    - Be aware that this general mention is not accepted in many jurisdictions. Nonetheless, common law jurisdiction tend to be more carrier inclined and accept the inclusion of these terms as a line of defense on cargo claims.
    - The ship's figures may also be included in the BL.
    - Letter of Protest
- If quality is disputed:
    - If an off-spec suspicious is founded, it can be included in the BL such statement.
    - Otherwise, a 'Clean on board' remark will take place
    - Letter of Protest

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Legal Aspects III

- Convenient to **agree the Trade Allowance** in advance to reduce uncertainty
- Despite an agreement, caution is needed as some countries do not accept trade allowances
- Legal ground for carriers exemption for shortages: HVR art.4.2.(m): “Wastage in bulk or weight or any other loss or damage arising from inherent defect, quality or vice of the goods”

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Legal Aspects IV

- Proper Insurance Coverage: **Policies & Clauses**
  - **The Institute Bulk Oil Clauses Risks (IBOC).**
- **Detailed Contracts And Agreements**
  - **Charterparties:**
    - **Shellvoy Charterparty:** Developed by Shell, the Shellvoy charterparty is widely used in the oil and gas industry.
    - **Asbatankvoy Charterparty:** The Asbatankvoy (Association of Ship Brokers and Agents Tanker Voyage Charterparty) is one of the most commonly used forms for crude oil and petroleum products.
- **Time bars** for claims and disputes to ensure rights and coverage are not forfeited.

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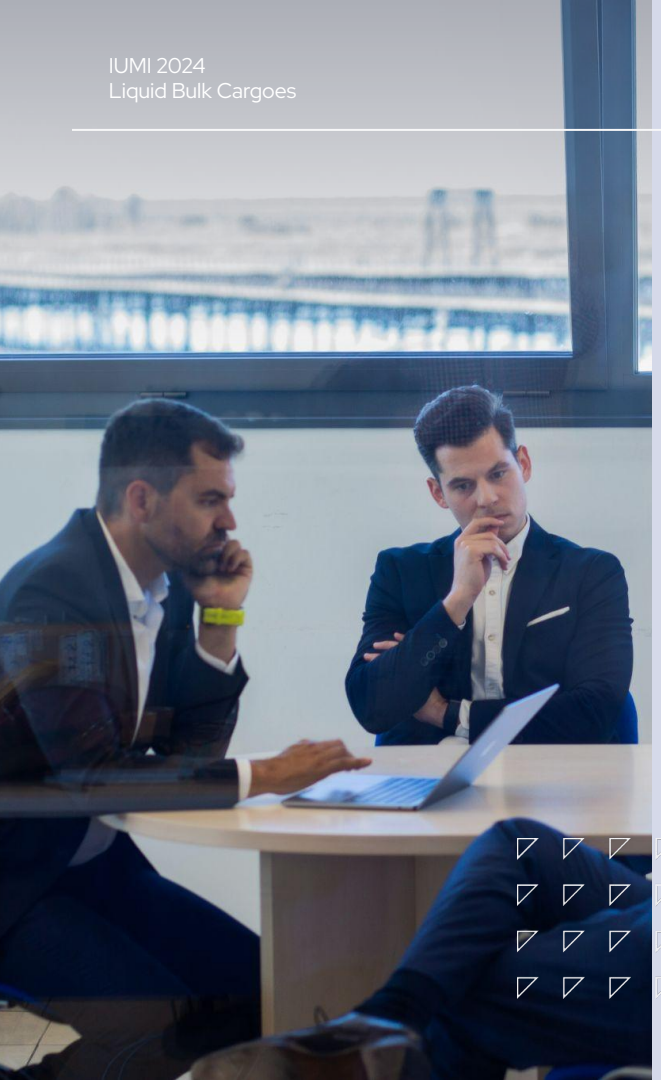

KEY TAKEAWAYS

- **Understand the Risk you are managing**
- **Mitigate Risks with Custom Strategies**
- **Act Swiftly - Minimize Claims Impact**
  - Implement prompt incident response procedures
  - Ensure quick claims management provider
- **Seek for Expert Solutions**
  - Partner with us for **efficient risk and claims management**
  - Benefit from industry-specific expertise

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Contact Us for Expert Solutions

T +34 955 283 913

E info@marlinblue.com
E pedro.nunes@marlinblue.com
E jorge.diaz@marlinblue.com

www.marlinblue.com

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