BALLAST WATER RECORD-KEEPING

A SEAFARER'S HANDBOOK

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“Ballast Water Record-Keeping: A Seafarer's Handbook”

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Chapter One

What Is Ballast Water?

Ballast water is seawater that is intentionally pumped into specially designed tanks aboard a vessel to ensure safe and efficient operation.

It is primarily used when a ship is not carrying cargo, or is only partially loaded, to maintain proper stability, structural integrity, and manoeuvrability.

Ballast water plays a vital role in the following operational aspects of a vessel:

Trim

Helps adjust the fore-and-aft angle of the vessel to optimise hydrodynamic performance, fuel efficiency, and propeller immersion.

Stability
Ensures the vessel remains upright and safe under all operating conditions by lowering the centre of gravity and increasing the righting lever in case of heeling.

Draft
Controls the depth to which the vessel sits in the water. Proper draft management is essential for ensuring adequate under-keel clearance and complying with port or canal restrictions.

Stress Distribution
Evenly distributes weight throughout the hull, reducing localised stresses on the ship's structure. This is particularly important in loaded or ballasted voyages where uneven weight distribution could compromise hull integrity.

In modern shipping, ballast water management is also a regulatory priority due to its environmental implications.

Ballast water may contain marine organisms and pathogens, which can be unintentionally transported across ecosystems.

To mitigate this, ships are required to comply with the IMO's Ballast Water Management Convention (BWMC), which mandates treatment systems and specific discharge procedures.

In summary, ballast water is not merely a counterbalance—it is a crucial component in vessel safety, performance, and environmental compliance.

Chapter Two

Why Record Ballast Water?

Ballast water is critical in ensuring a vessel's trim, stability, and structural integrity during various stages of its voyage. However, when ballast water is taken in one region and discharged in another, it may introduce invasive aquatic species into non-native marine ecosystems, posing a significant threat to biodiversity, fisheries, and local economies.

Regulatory Framework

To address these environmental concerns, the International Maritime Organisation (IMO) adopted the Ballast Water Management (BWM) Convention, which came into force in September 2017.

The IMO provides detailed instructions via:

- **IMO Resolution MEPC.127(53)** – *Guidelines for Ballast Water Record Book entries*
- **MEPC.300(72)** – Clarifies record formats and digital acceptance
- **Guidelines (G4)** – Cover procedures for proper recording and reporting

2. Key Regulations Related to Record Keeping

Regulation	Title / Scope
Regulation B-2	**Ballast Water Record Book** – Requires ships to maintain a BWRB and make entries of all ballast operations.
Regulation B-1	Requires all ships to carry and implement a **Ballast Water Management Plan (BWMP)** approved by the flag state.
Regulation E-1	**Surveys and Certification** – The BWRB is subject to inspection during initial, renewal, and annual surveys.
Regulation D-1	Outlines the requirements for ballast water **exchange standards** (now phased out for most ships).
Regulation D-2	Specifies the **Ballast Water Performance Standard**, including use of BWMS, under which record keeping is essential.

This convention mandates that all ships ≥400 GT:

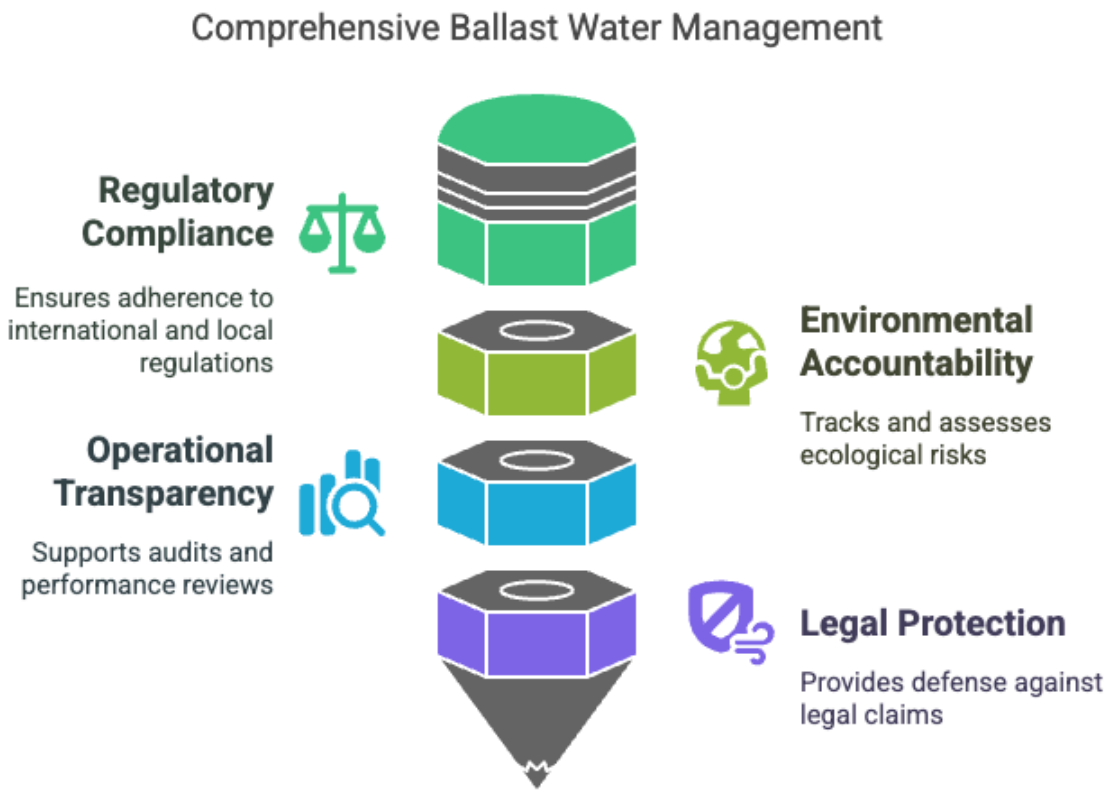
- Manage ballast water and sediments in accordance with an approved Ballast Water Management Plan (BWMP).
- Install ballast water treatment systems or follow approved exchange standards.
- Maintain comprehensive records of all ballast water operations in the Ballast Water Record Book (BWRB), whether electronic or manual.

- Present the BWRB to Port State Control (PSC) or Flag State surveyors upon request

Purpose of Ballast Water Record-Keeping

Regulatory Compliance:

- Demonstrates adherence to IMO, flag state, and port state control (PSC) requirements.
- Facilitates smooth inspections by providing evidence of proper ballast operations.



Environmental Accountability:

- Enables tracking and verification of ballast discharge locations and volumes.

- Aids in assessing the ecological risk associated with the movement of non-native organisms.

Operational Transparency:

- Supports internal audits and vetting inspections.
- Assists in reviewing treatment system performance or identifying anomalies in ballast handling.

Legal Protection:

- Serves as an official log to defend against allegations of non-compliance or environmental damage.
- Maintains a record in case of investigations involving ballast-related incidents.

What Must Be Recorded?

- Dates, times, and locations of ballast water intake and discharge.
- Volume and source of water.
- Treatment system operation status and relevant parameters.
- Ballast exchange procedures, if applicable.
- Any system malfunctions or deviations from the approved BWMP.

Accurate, timely, and truthful entry in the Ballast Water Record Book is not just a regulatory formality — it is a professional obligation that safeguards your vessel, the environment, and your career.

Chapter Three

Understanding the Ballast Water Record Book

The Ballast Water Record Book (BWRB) is a critical logbook used to record all ballast water activities on board a ship.

This log is an essential document for ensuring compliance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

Accurate and timely entries help prevent the spread of invasive aquatic species and ensure that ballast water is handled in accordance with environmental regulations.

Key information in BWRB

Each record in the Ballast Water Record Book must contain the following key information:

Date and Time:

Record the exact date and time of the ballast water operation. This is crucial for tracking the timeline of ballast operations and ensuring compliance with relevant maritime laws.

Port/Location (or Latitude-Longitude):

Specify the port or location where the ballast operation took place. If available, provide the precise **latitude and longitude** coordinates, particularly for open sea operations or during transfers in international waters.

This helps authorities pinpoint the exact location of ballast water handling.

Volume (in cubic meters):

Include the exact volume of ballast water being taken on board or discharged. This is a vital statistic, ensuring that ballast water volumes are carefully monitored to prevent excess discharge, which may contribute to the introduction of invasive species.

Officer's Signature:

The officer overseeing the ballast water operation (usually the Officer in Charge of the Ballast Water Treatment System or the deck officer) must sign the record.

This verifies that the information is accurate and that the operation was conducted as per the approved Ballast Water Management Plan (BWM Plan).

Whether the Ballast Water Management (BWM) Plan was followed:

It is essential to record whether the operation adhered to the ship's approved Ballast Water Management Plan (BWM Plan).

This ensures that all ballast water handling activities comply with the ship's procedures for managing ballast to avoid environmental contamination.

If deviations occur, they should be recorded along with a justification for the exception.

The Ballast Water Record Book should be signed by the Master of the vessel, attesting to the accuracy of the records.

Additionally, this logbook must be readily available for inspection by port state control officers, environmental agencies, and other relevant authorities to ensure compliance with global regulations.

Chapter Four

When Should You Make Entries?

As part of maintaining compliance with international maritime regulations and ensuring proper environmental stewardship, it's critical to record all activities involving ballast water on board.

The Ballast Water Record Book (BWRB) is a legally required document where ship operators must note specific events that take place while managing ballast water.

Here's an overview of the key entries that must be made:

Ballasting – When Water is Taken Onboard

An entry must be made each time ballast water is taken on board the vessel. This includes specifying:

- The date and time of ballasting
- The location (coordinates or port) where the water was taken
- The volume of ballast water taken on
- The type of water taken (e.g., seawater, freshwater)

Why it's important: Proper documentation of ballasting helps track the movement of water that may contain invasive species, supporting efforts to prevent the spread of aquatic organisms.

Deballasting – When Water is Discharged

Every time ballast water is discharged from the vessel, an entry must be made, including:

- The date and time of deballasting
- The location of discharge (coordinates or port)
- The volume of ballast water discharged
- The method of discharge (e.g., to shore facilities, via approved discharge systems)

Why it's important: Ensuring proper discharge records helps prevent pollution and ensures compliance with international regulations like the Ballast Water Management Convention.

Ballast Circulation or Treatment

If the ballast water is circulated or treated to minimise risks associated with invasive species, this should also be recorded. Key details include:

- The date and time of circulation or treatment
- The specific treatment system used (e.g., UV treatment, filtration, chemical treatment)
- Any details on the ballast water's condition before and after treatment

Why it's important: Treating ballast water ensures compliance with regulations and minimises the risk of environmental damage caused by non-native species.

Discharge to Shore Reception Facilities

If ballast water is discharged to shore reception facilities, an entry must be made.

This should include:

- The date and time of discharge
- The reception facility's name and location

- The amount of ballast water discharged
- Any relevant approvals or permits

Why it's important: Discharging ballast water to shore reception facilities is an acceptable method of managing ballast water, and documenting it ensures proper tracking of environmental compliance.

Accidental Ballast Events

In the event of an accidental ballast discharge or any unplanned event related to ballast water, you must record:

- The date, time, and nature of the accident
- The volume of ballast water discharged or spilt
- Actions taken to mitigate the event, including any clean-up or emergency procedures

Why it's important: Recording accidental events ensures accountability and transparency in case of environmental harm. It also helps with future risk assessments and safety improvements.

Other Notes or Special Operations

Any unusual or special operations related to ballast water management should be noted, including:

- Modifications to the standard ballast operations due to operational needs

- Any exceptional circumstances or deviations from regular procedures

- Any significant issues observed during ballast water operations

Why it's important: These notes help ensure that the vessel's ballast water management is continuously assessed, allowing for operational adjustments and ensuring compliance with regulatory changes.

The Ballast Water Record Book is a critical document that supports environmental protection and regulatory compliance in the maritime industry.

By diligently recording all necessary activities, ship operators contribute to global efforts in preventing the spread of invasive species and maintaining the health of marine ecosystems. Always ensure that entries are made accurately and in a timely manner, as these records are subject to inspection by maritime authorities.

Chapter Five

How to Fill Out the Ballast Water Record Book (Step-by-Step)

By following this step-by-step process, maritime professionals can ensure that the Ballast Water Record Book is completed accurately and in compliance with both national and international regulations.

This record helps prevent the spread of invasive aquatic species and contributes to maintaining the health of marine ecosystems.

Taking Ballast Water Onboard

Date/Time: Record the date and time of the ballast water uptake.

- Example Entry:
  Date/Time: 10-05-2025, 0600 hrs
  Location: Singapore Anchorage / Lat-Long
  Volume: 1,500 m^3
  Officer Signature: [Name]
  Remarks: As per the BWM Plan

Note: The volume of water taken onboard should be documented, ensuring accuracy for compliance with ballast water management regulations.

Ballast Water Uptake (Ballasting)			
Ship Name	**MV Ocean Spirit**	**IMO Number**	**9876543**
Date	14-May-2025	**Time (Start-End)**	0400 - 0700 hrs
Location (Port/Lat-Long)	Singapore Anchorage (01°16'N, 103°51'E)		
Tank Name(s)	FP (300 m³), DB1 (600 m³), DB2 (700 m³)		
Total Volume Taken	1,600 m³		
Depth (if outside port)	18 m		
Salinity	32 PSU		
Purpose	Trim and draft adjustment for voyage		
Remarks	Ballasting via gravity. Monitored per BWM Plan		
Officer Name & Rank	A. Singh, Chief Officer		
Signature	[signed]		

Circulating or Treating Ballast Water:

Log the treatment of ballast water if it is treated using systems like UV or filtration.

- Example Entry:
  Date/Time: 10-05-2025, 1200 hrs
  Location: Singapore Anchorage / Lat-Long
  Treatment Method: UV Treatment
  Volume Treated: 1,500 m^3
  Remarks: As per the BWM Plan, the UV system in operation
  Officer Signature: [Name]

Note: Always mention the equipment used (e.g., UV or filtration) and the estimated volume of water treated.

Ballast Water Treatment or Circulation

Ship Name	**MV Ocean Spirit**	**IMO Number**	**9876543**
Date	18-May-2025	**Time**	0300 - 0500 hrs
Tank Name(s)	DB2 (700 m^3)		
Volume Treated	700 m^3		
Treatment Method	UV + Filtration (BWMS: TechSea-UV3000)		
Purpose	Pre-discharge compliance		
Remarks	Treated ballast before arrival at ECAs. Sensors and log parameters verified.		
Officer Name & Rank	J. Fernandes, Chief Officer		
Signature	[signed]		

Discharging Ballast Water to Sea:

Document discharge details when water is released to the sea.

- Example Entry:
  Date/Time: 10-05-2025, 1800 hrs
  Location: Port of Singapore / Lat-Long
  Volume Discharged: 1,400 m^3
  Volume Remaining: 100 m^3
  Compliance: Confirm whether the Ballast Water Management (BWM) Plan was followed.
  Officer Signature: [Name]

Note: Include both the discharge location (Port or Lat-Long) and the volume discharged, as well as the volume remaining in the tank.

Ballast Water Discharge

Ship Name	**MV Ocean Spirit**	**IMO Number**	**9876543**
Date	17-May-2025	**Time (Start-End)**	1000 - 1230 hrs
Location (Port/Lat-Long)	Fujairah Anchorage (25°16'N, 56°31'E)		
Tank Name(s)	DB1 (600 m³), DB2 (700 m³)		
Total Volume Discharged	1,300 m³		
Volume Remaining Onboard	FP (300 m³)		
Method Used	Pump		
BWM Plan Followed	Yes		
Remarks	Discharge monitored. Weather clear. Complied with UAE Port Control guidelines.		
Officer Name & Rank	M. Rajan, 2/O		
Signature	[signed]		

Discharging to a Reception Facility:

Record discharge to a reception facility such as a port or waste management service.

- Example Entry:
  Date/Time Uptake: 09-05-2025, 0900 hrs
  Date/Time Discharge: 10-05-2025, 1800 hrs
  Reception Facility: Singapore Port Reception Facility

Volume: 1,400 m^3
Compliance: Confirm if the discharge complied with regulations.
Officer Signature: [Name]

Note: Always include the reception facility's name, and ensure that both the uptake and discharge dates/times are logged.

Discharge to Shore Reception Facility

Ship Name	MV Ocean Spirit
IMO Number	9876543
Date of Discharge	22-May-2025
Time of Discharge	0830 – 1015 hrs
Location (Port/Facility)	Port of Rotterdam – Berth 31 (Ballast Water Reception Facility)
Tank Name(s)	DB2 (500 m³), FP (300 m³)
Total Volume Discharged	800 m³
Facility Name	Rotterdam Port Authority – BWRF Unit A
Means of Transfer	Shore pipeline connection via manifold
Treatment Onboard Prior to Discharge	Not applicable (direct to facility)
BWM Plan Followed	Yes
Remarks	Discharge carried out under supervision of Port Facility Officer. BWR receipt obtained and filed onboard.
Officer in Charge	A. Mukherjee, Chief Officer
Signature	[signed]

Accidental Discharge or Emergency

Document accidental discharges or emergency situations when ballast water is unintentionally released.

- Example Entry:
  Date/Time: 10-05-2025, 0400 hrs
  Location: Port of Singapore / Lat-Long
  Volume: 100 m^3
  Cause: System malfunction / Emergency discharge
  Actions Taken: Immediate shutdown of system, emergency notification to authorities
  Officer Signature: [Name]

Accidental Discharge / Exceptional Event

Ship Name	**MV Ocean Spirit**	**IMO Number**	**9876543**
Date/Time	19-May-2025, 0200 hrs		
Location (Port/Lat-Long)	Indian Ocean (Lat 05°34'S, Long 75°10'E)		
Tank Affected	DB3 (approx. 500 m^3 lost)		
Cause	Valve failure during rough weather		
Action Taken	Valve isolated, engineer notified, Class & PSC informed		
Remarks	Entry made as per emergency protocol, under supervision of Chief Officer		
BWM Plan Followed	Partially (discharge not planned)		
Officer Name & Rank	V. Patel, 2/O		
Signature	[signed]		

Note: Describe the cause of the discharge, the volume, the exact location, and actions taken to rectify the issue. Be sure to include the authorities who were informed.

General Remarks:

Additional observations related to ballast water management.

- Example Entry:
  Date/Time: 10-05-2025, 0600 hrs
  Remarks: Routine sediment cleaning completed. Tank inspection notes: No signs of contamination or damage.
  Officer Signature: [Name]

Note: Document sediment cleaning, tank inspections, and any non-standard procedures or maintenance performed on the ballast water systems.

General Notes/Handling Log Page

Date	Activity	Comments	Officer Name & Rank	Signature
20-May-2025	Sediment removal from DB4	Conducted during drydock in Singapore. Sludge sent to port reception facility.	R. Sharma, Chief Officer	[signed]
21-May-2025	Tank flushing (DB1)	To remove accumulated mud. Treated before next ballasting.	V. Mehta, 2/O	[signed]

Best Practices:

- Ensure that all entries are legible and signed by the responsible officer.
- Record the time and location accurately to comply with international regulations.
- Keep a detailed log of each event (uptake, treatment, discharge, etc.) to avoid any discrepancies.

Chapter Six

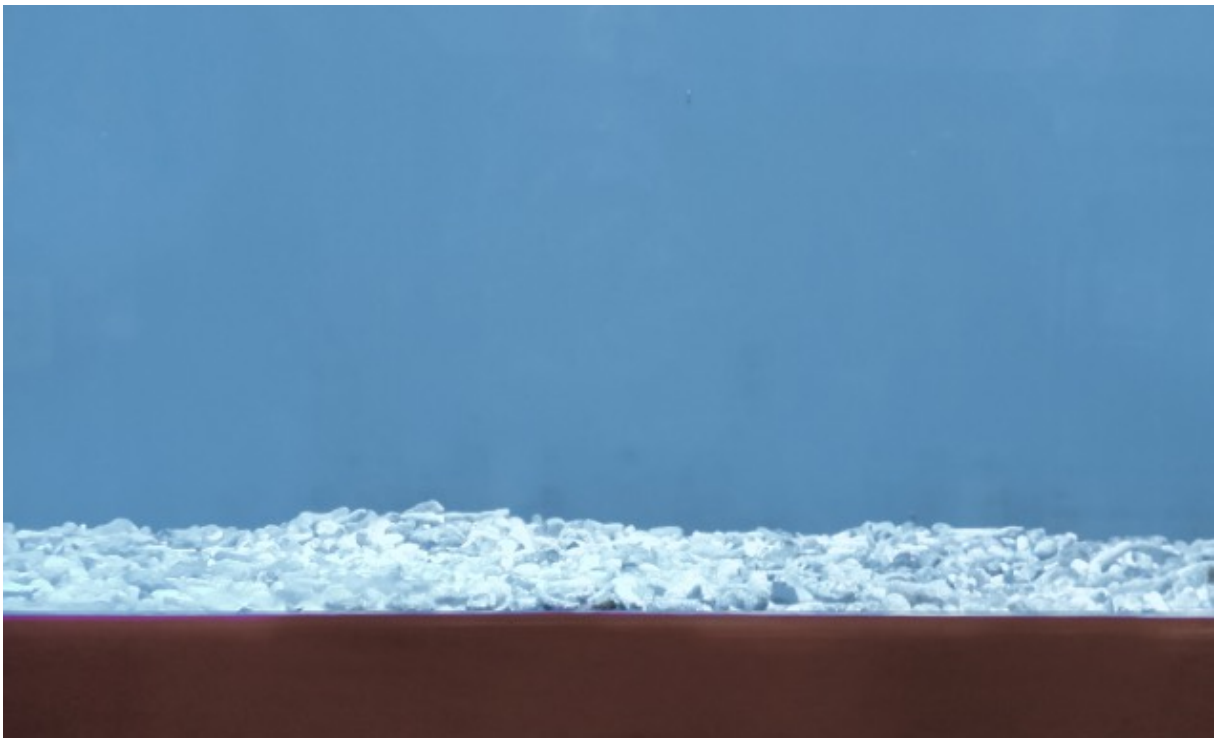
Common Terms Simplified

BWM Plan (Ballast Water Management Plan):

A ship-specific official plan is required by international maritime regulations (such as the BWM Convention) for managing ballast water. It outlines the methods for preventing the spread of aquatic invasive species by controlling the exchange, treatment, and discharge of ballast water on board the vessel.

Sediments:

The particles, such as sand, dirt, or organic matter, that accumulate in ballast tanks. These materials are typically transferred to ballast water during its uptake and can pose ecological risks if not properly managed.



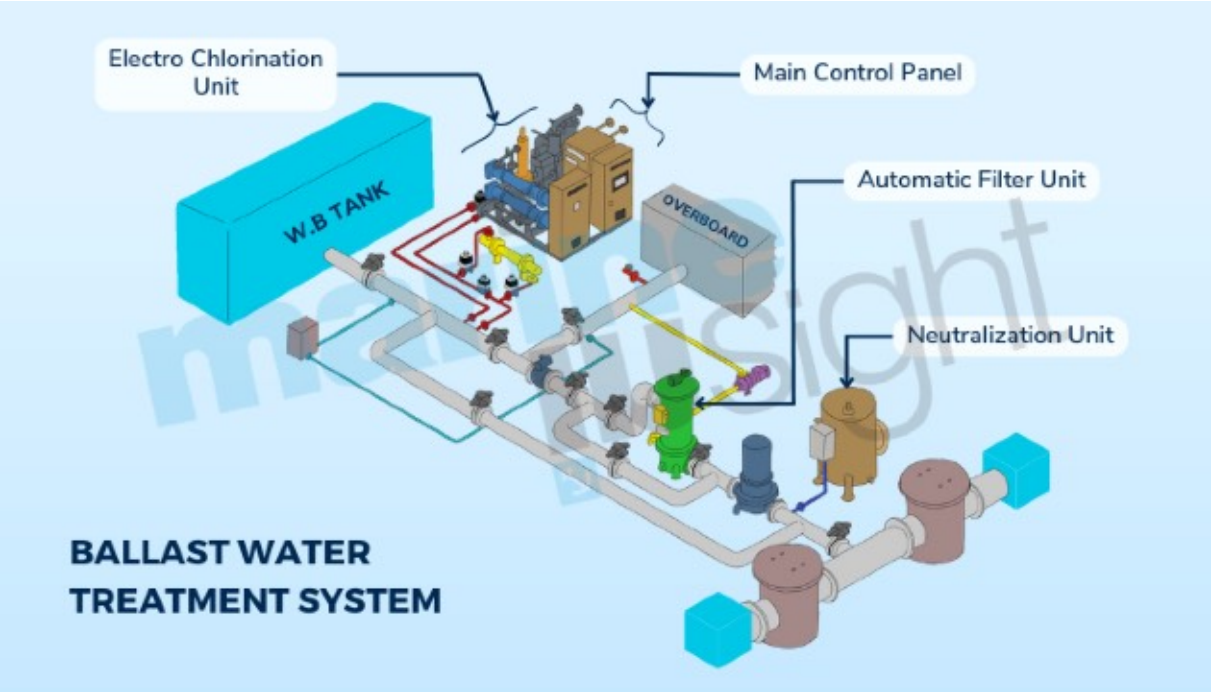
Exchange:

A process where the ballast water within the ship's tanks is replaced with fresh seawater during a voyage.

The goal of ballast water exchange is to reduce the risk of introducing invasive species into new ecosystems by ensuring the ballast water comes from a different location, ideally one with distinct biological conditions.

BWMS (Ballast Water Management System):

A system onboard ships is designed to treat ballast water before it is discharged into the sea, ensuring compliance with international standards.



It can consist of various technologies such as filtration systems, ultraviolet (UV) light, chemical treatments, and electrolysis, all

aimed at eliminating harmful organisms and pathogens from the ballast water.

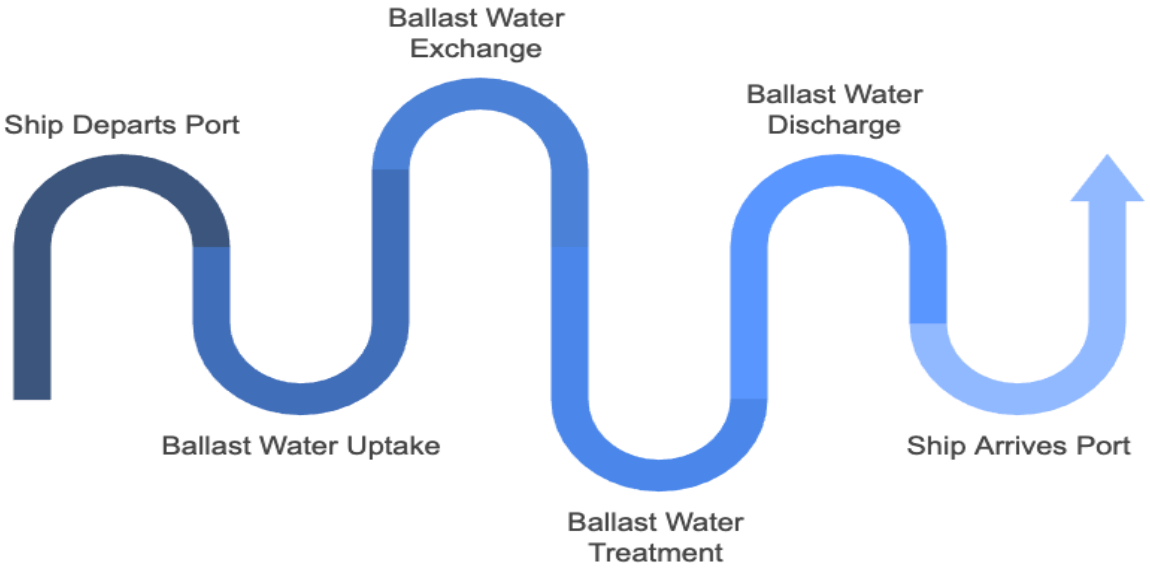
Ballast Water Record Book (BWRB):

A ship's official logbook is used to document the operational details of ballast water management activities.

The record book includes information such as the volume and source of ballast water taken on board, treatment details, discharge locations, and any ballast water exchange procedures conducted during the voyage. This document must be kept up-to-date and be available for inspection by port state authorities.

Voyage Information:

Details regarding the ship's journey, including departure and arrival ports, dates, and geographical coordinates during ballast water uptake and discharge.



This is crucial for tracking the ship's compliance with BWM procedures, ensuring that ballast water is exchanged or treated appropriately in accordance with regulations.

Ballast Water Treatment (BWT):

The various processes used to treat ballast water to remove or neutralise harmful organisms and pathogens before discharging it into the sea.

Common treatment technologies include filtration, ultraviolet (UV) light, and chemical treatments. These systems must be regularly maintained and their operations logged in the Ballast Water Record Book.

Risk Assessment:

A critical component of the BWM Plan is that it assesses the potential ecological risks associated with ballast water discharge based on factors such as the source of the ballast water, the location of discharge, and the operational characteristics of the ship.

This risk assessment informs decisions regarding ballast water treatment and exchange.

Exemptions and Approvals:

Under certain conditions, a ship may be granted temporary or permanent exemptions from certain provisions of the BWM Convention.

These exemptions and any subsequent approvals from relevant authorities must be documented and included in the vessel's Ballast Water Management Plan.

Chapter Seven

Typical Mistakes and How to Avoid Them

By proactively avoiding the below-listed common mistakes, seafarers can guarantee that ballast records are meticulously maintained with precision, transparency, and full compliance with regulations.

❌ **Forgetting to sign**
✅ **Always sign and include your rank**. Signing ensures accountability and verifies the entry's authenticity. The seafarer must also include their rank to ensure clarity on who made the entry.

Skipping volume or location details
✅ **Always estimate volumes and note the port or coordinates**. Even if the exact volume is uncertain, providing an estimate helps ensure accuracy in records. Also, always mention the location, such as the port name or coordinates, for reference.

Not following the sequence
✅ **Keep entries in order of actual operations**. Record the sequence of events in the same order they occur to avoid confusion or inconsistencies. This will ensure that the records match the sequence of operational activities on board.

Overwriting or erasing previous entries
✅ **Never overwrite or erase entries**. If a mistake is made, draw a single line through the error, initial it, and make the correction

next to it. This maintains the integrity of the record and complies with official documentation practices.

❌ **Failing to indicate the time of ballast operations**
✅ **Always specify the exact time**. Record the time when ballast operations start and end, as this is crucial for tracking the vessel's stability and weight distribution. Lack of timestamps can cause operational discrepancies.

Ignoring stability considerations when recording ballast changes
✅ **Ensure stability is considered**. Before documenting ballast changes, ensure the vessel's stability calculations are completed, especially when operating in rough seas or when significant ballast is shifted.

Inaccurate descriptions of ballast water sources
✅ **Be specific about the ballast source**. Always specify the water source of the ballast (e.g., "from Port Tank 2"). Vague descriptions can cause confusion during audits or when revisiting the records.

Not recording ballast exchange details properly
✅ **Include proper ballast exchange information**. If a ballast water exchange is performed, include the quantity of water exchanged, the location of the exchange, and any operational conditions (e.g., sea state, wind direction) that may impact the process.

Skipping signatures or timestamps from other crew members
✅ **Ensure all relevant crew members sign off**. In cases where multiple crew members are involved in the ballast operations, it’s

essential to have them sign the records with their timestamps, confirming their involvement in the procedure.

❌ **Not updating ballast records regularly**
✅ **Maintain real-time updates**. Record ballast changes as soon as they occur. Delays in updating the records can lead to inaccuracies, especially when multiple changes are made in a short time frame.

Chapter Eight

FAQs for Seafarers

Q: How should I report a malfunction or failure in the ballast system?
A: Immediately report any malfunction to the bridge or chief engineer, and document the issue in the ship's logbook. Follow the vessel's safety and maintenance protocols for such issues.

Q: Can I perform ballast operation adjustments without prior approval?
A: No. Ballast adjustments must always be authorised by the officer in charge of the operation, ensuring safety and compliance with the vessel's operational procedures.

Q: What should I do if ballast levels seem to be inconsistent?
A: Report this immediately to the relevant department (Bridge/Engine Room) to investigate further. This could indicate a leak or other issues that require attention.

Q: How often should ballast tank readings be recorded?
A: Ballast tank levels should be recorded regularly, typically after every ballast operation, or as per the ship's operational schedule. Always ensure that readings are updated in the system.

Q: Is it necessary to maintain ballast system records?
A: Yes, all ballast operations must be properly documented, including volume changes, adjustments, and any issues encountered during the process.

Q: Can ballast be transferred during rough weather conditions?
A: Ballasting should be avoided during rough weather unless it's necessary for operational or safety reasons. Always check with the officer on duty before proceeding.

Q: What are the key safety precautions when handling ballast?
A: Always ensure you are wearing the appropriate personal protective equipment (PPE), check the system for any leaks, and ensure the ballast system is in proper working condition before making adjustments.

Q: How do I calculate ballast requirements for stability?
A: The ballast requirements are calculated based on the vessel's stability software, which takes into account current weight distribution, cargo, and environmental factors. Always follow the stability guidelines provided by the ship's operational manual.

Q: Who should be notified if there's an issue with ballast water discharge compliance?
A: The officer in charge of ballast operations, the chief officer, or the environmental officer must be notified immediately. Ensure proper documentation of the event for compliance with MARPOL regulations.

Q: What should I do if I suspect a ballast tank has been contaminated?
A: Report it to the appropriate officers immediately. Do not attempt to correct the situation independently. Follow the ship's procedure for contamination and any required cleaning operations.

Chapter Nine

Quick Checklist

Ensure all relevant procedures are followed to ensure environmental and operational compliance:

Ballast Water Management (BWM) Plan:
✅ **Is the BWM Plan available?** - Ensure the plan is up-to-date and accessible.

Has the BWM Plan been followed? - Cross-check the ballast discharge and treatment processes.

Local Regulations Compliance:

Have you checked local ballast discharge rules? - Confirm compliance with local port and environmental regulations.

Equipment Functionality:

Is the equipment functioning correctly? - Inspect all ballast systems (pumps, valves, etc.) for any malfunctions.

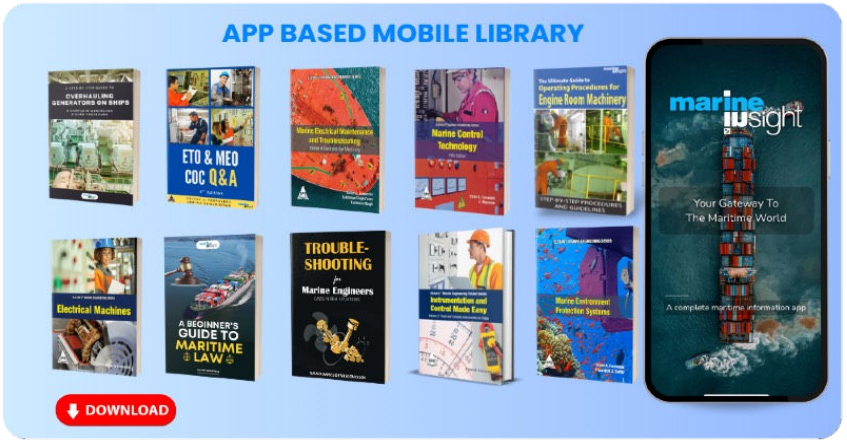
Ballast Quality Monitoring:

Is salinity and volume noted? - Ensure the salinity and volume of ballast water are recorded for environmental reporting.

Documentation and Recordkeeping:
✅ **Has the operation been recorded and signed? -** Confirm the ballast operation has been accurately logged in the official logbook, signed by the officer-in-charge.

Additional Resource for Seafarers:

eBooks : learn.marineinsight.com



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