|  |
| --- |
| Ballast Water Management (BWM) Plan |
|  |
| **In accordance with Resolution MEPC.127(53) as amended by MEPC.306(73) and MEPC.370(80)**  **Profile view of the ship** |
|  |
| **COMPANY NAME**  Address line 1  Address line 2  Telephone Number  Fax Number  E-Mail |
|  |

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# REVISION HISTORY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rev.No. | Date | Reason for Issue | Prepared by (Name and Company Name) | Verified by | Approved by |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# PREAMBLE

Each ship shall have on board and implement a Ballast Water Management plan. The Ballast Water Management plan shall be specific to each ship and shall at least:

1. detail safety procedures for the ship and the crew associated with Ballast Water Management as required by Convention;

2. provide a detailed description of the actions to be taken to implement the Ballast Water Management requirements and supplemental Ballast Water Management practices as set forth in the Convention;

3. detail the procedures for the disposal of Sediments:

.1. at sea; and

.2. to shore;

4. include the procedures for coordinating shipboard Ballast Water Management that involves discharge to the sea with the authorities of the State into whose waters such discharge will take place;

5. designate the officer on board in charge of ensuring that the plan is properly implemented;

6. contain the reporting requirements for ships provided for under the Convention; and

7. be written in the working language of the ship. If the language used is not English, French or Spanish, a translation into one of these languages shall be included.

# INTRODUCTION

1. This Plan is written in accordance with the requirements of [Regulation B-1](mk:@MSITStore:C:\Program%20Files\Lloyd's%20Register\Rulefinder\9.10\Rulefinder_STAT.chm::/l31.1.3.2.2.3.3.3.2.html) of the International Convention for the Control and Management of Ships’ Ballast Water and Sediments, 2004 (the Convention) and the associated Guidelines.

2. The purpose of the Plan is to meet the requirements for the control and management of ship’s ballast water and sediments in accordance with the Guidelines for Ballast Water Management and the Development of Ballast Water Management Plans resolution MEPC 127(53) (G4) as amended by MEPC.306(73) and MEPC.370(80). It provides standard operational guidance for the planning and management of ships’ ballast water and sediments and describes safe procedures to be followed.

3. This Plan has been approved by TL and no alteration or revision shall be made to any part of it without the prior approval of TL.

4. This Plan may be inspected on request by an authorized authority.

# SHIP PARTICULARS

|  |  |
| --- | --- |
| Ship’s name |  |
| Flag |  |
| Port of Registry |  |
| Gross Tonnage |  |
| IMO Number |  |
| Length (LBP) |  |
| Beam |  |
| International call sign |  |
| Deepest ballast drafts (normal/heavy weather) |  |
| Total Dedicated Ballast Water Capacity |  |
| Main ballast water management method(s) | D-2 Water Treatment |
|
|
| Appointed Ballast Water Management Officer | Appointed Ballast Water Management Officer is Chf Officer. (If Chf. Officer is not on board,2nd officer will be responsible) |

This plan should be kept available for inspection on request by a port state control officer or by a port state quarantine officer.

# SECTION 1 - PURPOSE

Studies carried out in several countries have shown that many species of bacteria, plants and animals can survive in a viable form in ballast water and sediment carried in ships, even after journeys of several weeks duration. Subsequent discharge of ballast water or sediment into the waters of port states may result in the establishment of colonies of harmful species and pathogens which can seriously upset the existing ecological balance. Although other methods have been identified by which organisms are transferred between geographically separated sea areas, ballast water discharge from ship appears to have been prominent among those identified.

The potential for ballast water discharge to cause harm has been recognised not only by the International Maritime Organization (IMO), but also by the World Health Organization which is concerned about the role of ballast water as a medium for the spreading of epidemic disease bacteria.

**Conflict with safety**

Unless applied carefully some of the measures being urged for ballast management can affect a ship’s safety, either by creating forces within the hull that are greater than the design parameters or by compromising the stability of the ship. It is because of concern about this that the IMO became involved in what would otherwise be a purely quarantine matter. It has been recognised by governments and the shipping industry that individual countries’ needs should be harmonised with the greater need to ensure the safety of ships, their crews and passengers.

**Summary of records required**

To be able to demonstrate at the arrival port that the correct measures have been completed, it will be necessary to maintain a full and accurate ballast log. Even if a ship is not trading in an area where ballast water information is required, it may later prove worthwhile to have a history of what water has been carried.

# SECTION 2 - PLANS/DRAWINGS OF THE BALLAST SYSTEM

Plans or drawings of the ballast system for example:

1). ballast tank arrangement;

2). ballast capacity plan;

3). a ballast water piping and pumping arrangement, including air pipes and sounding arrangements;

4). ballast water pump capacities;

5). the ballast water management system used onboard, with references to detailed operational and maintenance manuals held on board;

6). installed ballast water treatment systems; and

7). a plan and profile of the ship, or a schematic drawing of the ballast arrangement.

8). Ballast water management plan for D-1, stamped on the XX-XX-XXXX cover page

**All drawings and plans which are defined above of ballast system are in the appendix 1.**

# SECTION 3 – DESCRIPTION OF THE BALLAST SYSTEM

**Ballast pumps**

Company name :

Type :

Pressure :

RPM :

Capacity :

Location :

Company name :

Type :

Pressure :

RPM :

Capacity :

Location :

**Ballast Tanks**

|  |  |  |  |
| --- | --- | --- | --- |
| Tank | Location (frames) | Capacity [m3] | Pumps available |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Time for operations of final draining (stripping) of tanks are not included in above mentioned times.

# SECTION 4 - BALLAST WATER SAMPLING POINTS

This section is confined to identifying sampling points.

First engineer will take sample of ballast water from any location or near the pumps if the quarantine officer request to take sample from pipe line.

If quarantine officer want to take sediment on the ballast tanks, quarantine officers must be advised of all safety procedures to be observed when entering enclosed spaces.

Pumping and sounding plans will be ready if the quarantine officer request to inspection of this plan.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tank | Water sampling points | | | Type (sounding pipe, manhole, sampling facility on discharge line) |
| Frame | Distance from CL | Location |
|  |  |  |  |  |
|  |  |  |  |  |

Compliance with ballast water performance standard (D-2) should be assessed at ballast water discharge, as near to the point of discharge as practicable, during ballast water discharge whenever this is possible.

In-tank sampling to provide an indication of compliance with standard D-2 should only be used if ballast water treatment process occurs on uptake, prior to or whilst ballast water is in the tank. If any part of the treatment or neutralisation process is applied during the ballast water discharge, then in-tank sampling is inappropriate.

Reference is made to Part 1 of the Annex to MEPC.173(58) – G2 Guidelines for recommendations regarding sampling techniques and procedures for sampling from the ballast water discharge line.

# SECTION 5 – PRECAUTIONARY PRACTICES

### 5.1 Minimising uptake of harmful aquatic organisms, pathogens and sediments

When loading ballast, every effort should be made to avoid the uptake of potentially harmful aquatic organisms, pathogens and sediment that may contain such organisms. The uptake of ballast water should be minimised or, where practicable, avoided in areas and situations such as:

* Areas identified by the Port State in connection with advice relating to 12.1.2 below
* In darkness when bottom dwelling organisms may rise up in the water column.
* In very shallow water or
* Where propellers may stir up sediment.
* Nearby sewage outfalls
* When a current with turbulence
* Nearby dredging area

### 5.2 Removing Ballast Sediment on a Timely Basis

Where practicable routine cleaning of the ballast tank to remove sediments, should be carried out in mid-ocean or under controlled arrangements in port or dry dock, in accordance with the provisions of the ship’s ballast water management plan.

### 5.3 Avoiding Unnecessary Discharge of Ballast Water

If it is necessary to take on and discharge ballast water in the same port to facilitate safe cargo operations, care should be taken to avoid unnecessary discharge of ballast water that has been taken up in another port.

# SECTION 6 - BALLAST WATER MANAGEMENT

|  |  |
| --- | --- |
| Manufacturer’s Name |  |
| Model Name |  |
| Technology |  |
| Operation required during ballasting/deballasting/circulation |  |
| Treatment Rated Capacity (TRC) in m3/h \* |  |
| Installation Location |  |
| Type Approval Certificate (TAC) No. |  |
| TAC issued by |  |
| Number of ballast pumps to be used simultaneously (one/two ballast pumps) \*\* |  |
| *\*: Range of flow rate from a minimum acceptable capacity up to the Treatment Rated Capacity acc. to TAC.*  *\*\*:* *Only one/two pumps can be used at a time for ballasting/de-ballasting, except in cases of emergencies.* | |

**Ballast water treatment system’s operation manual**

The system should only be operated in accordance with the system design criteria and manufacturer's operational and maintenance instructions. (name of specific operational and maintenance manual of the BWMS and doc. number, approval reference number etc.)

**Control and monitoring equipment**

The control equipment automatically monitors and adjusts necessary dosages or intensities or other aspects of the ballast water management system.

The control equipment should be able to store data for at least 24 months and should be able to display or print a record for official inspections as required. In the event the control equipment is replaced, means should be provided to ensure the data recorded prior to replacement remains available on board for 24 months.

The control equipment of this treatment system consists of the following:

* Number of control panels with locations
* Integration to vessel automation system, if applicable
* List of equipment located in hazardous area with reference to explosion proof (EX) certificate, if applicable

**Normal operating parameters**

Simple and important parameters for the operation of the equipment such as pressure, flow rate, etc. are included in BWMS Operation Manual.

**Limitations of the system**

Limitations for operation of the equipment (minimum holding time in the tanks for systems using active substances, minimum UV transmittance the system manages to treat, salinity/temperature/pH etc. , use of stripping ejector (i.e. treatment of driving water)) are included in BWMS Operation Manual.

**Ballasting operations**

Procedure for ballasting operation such as before ballasting operations start (i.e warm up sequence or internal circulation), for stopping ballasting operations are included in BWMS Operation Manual.

**De-ballasting operations**

Procedure for de-ballasting operation such as before de-ballasting operations start (i.e warm up sequence or internal circulation), for stopping de-ballasting operations are included in BWMS Operation Manual.

**Shutdown of the treatment system**

Procedure for shutdown is included in BWMS Operation Manual.

**By-pass**

The Convention requires the control system of the BWMS to trig an alarm and log any by-pass of the BWMS. This include bypass due to gravity filling or discharge of tanks, if applicable.

Treatment is not required for internal transfer, but such operations will be recorded. The system will always trig the alarm in case of by-pass.

Opening the by-pass valves will give alarm and logging during ballasting/de-ballasting. (All by-pass valves subject to alarm and logging are to be listed as approved)

By-passing the treatment system during operation within one coastal zone is allowed. This will lead to untreated water in the pipeline.

**Cleaning of combined ballast tanks (if applicable, fill in procedure)**

Tanks used for other purposes (e.g. mud / grey water / treated sewage) should be cleaned prior to using for holding ballast water that shall be treated. Otherwise the BWMS may not work properly.

**Procedure for notations of OIL RECOVERY VESSEL and CHEMICAL RECOVERY VESSEL**

*(This section is applicable for vessels with OIL RECOVERY VESSEL or CHEMICAL RECOVERY VESSEL notation and if any component of BWMS is installed in hazardous area and does not hold the applicable explosion proof certificate.)*

The vessel has restricted operations when in OIL RECOVERY VESSEL or CHEMICAL RECOVERY VESSEL mode. The vessel cannot perform ballasting operations unless as allowed to by the BWM Convention in Article 3.2 or Regulation A-3, or under a specific exemption from the flag accepted by the Party having jurisdiction over the waters in which the vessel operates. In practice, the restriction means that the vessel can only operate in waters under the jurisdiction of one Party when in OIL RECOVERY VESSEL or CHEMICAL RECOVERY VESSEL mode.

**Safety and emergency procedures for the BWMS**

The safety instructions as stated in the manufacturer’s Operation Manual are to be observed at all times.

The following Personal Protection Equipment (PPE) is provided in case of emergency:

|  |  |  |
| --- | --- | --- |
| PPE type | Location | Number |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

In the case of spillage or leakage of chemicals or gases, consult the procedures outlined in manufacturer’s manual regarding emergency procedures in case of leakages.

The following chemicals and/or gases are present during treatment either as by-products or as treatment media (if applicable):

|  |  |
| --- | --- |
| Chemical or gas | Hazards (toxic, flammable, explosive) |
|  |  |
|  |  |
|  |  |

**Maintenance of the BWMS**

The maintenance schedule for the treatment system is as found in the manufacturers Operation Manual are to be observed.

# SECTION 7 CONTINGENCY MEASURES

A vessel that has passed its D-2 compliance implementation date and has an inoperable Ballast Water Treatment System may use one of the alternative methods outlined in IMO Circular BWM.2/Circ.62; vessel is not allowed to discharge ballast water without the permission of the Port Authority and the flag state administration.

In general the port State, the flag State and the ship should work together to agree on the most appropriate solution to allow for the discharge of ballast water found to be non-compliant.

In case the ship is unable to manage ballast water discharge in accordance with this approved BWMP to meet D-2 standard, where D-2 compliance is required, the following contingency measures are to be decided on a case by case basis

Communication between the ship and the port State should occur and consider the following as possible measures:

Discharge ballast water to another ship or to a reception facility

Manage the ballast water or a portion in accordance with a method acceptable to the port State

Ballast water exchange carried out as described in the approved ballast water management plan for D-1, stamped on the XX-XX-XXXX. Stamped cover page is attached to the Appendix of this BWMP

Operational actions such as modifying sailing or ballast water discharge schedules, internal transfer of ballast water or the retention of ballast water on board the ship.

The discharge of ballast water is subject to any conditions of the port State. A statement that any malfunction and use of alternative management method shall be recorded in the BW Record Book.

The ship is required to do its best to correct malfunction of the BWMS as soon as possible and submit its repair plan to the port State control authorities and the flag State/TL.

# SECTION 8 - PROCEDURES FOR THE DISPOSAL OF SEDIMENTS

## 8.1 Sediment Management

All ships shall remove and dispose of sediments from spaces designated to carry ballast water in accordance with the ballast water management plan.

All practical steps should be taken during ballast uptake to avoid sediment accumulation, however, it is recognized that sediment will be taken on board and will settle on tank surfaces. When sediment has accumulated, consideration should be given to flushing tank bottoms and other surfaces when in suitable areas, i.e. areas complying with the minimum depth and distance whenever possible, conduct such Ballast Water exchange at least 200 nautical miles from the nearest land and in water at least 200 meters in depth, taking into account the Guidelines developed by the Organization.

Where the ship is unable to conduct Ballast Water exchange in accordance with previous, such Ballast Water exchange shall be conducted taking into account the Guidelines described in previous paragraph and as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 meters in depth.

The volume of sediment in a ballast tank should be monitored on a regular basis.

Sediment in ballast tanks should be removed in a timely basis in accordance with the Ballast Water Management Plan and as found necessary. The frequency and timing of removal will depend on factors such as sediment build up, ship’s trading pattern, availability of reception facilities, work load of the ship’s personnel and safety considerations.

Removal of sediment from ballast tanks should preferably be undertaken under controlled conditions in port, at a repair facility or in dry dock. The removed sediment should preferably be disposed of in a sediment reception facility if available, reasonable and practicable.

When sediment is removed from the ship’s ballast tanks and is to be disposed of by that ship at sea, such disposal should only take place in areas outside 200 nm from land and in water depths of over 200 m.

[Regulation B-5](mk:@MSITStore:C:\Program%20Files\Lloyd's%20Register\Rulefinder\9.10\Rulefinder_STAT.chm::/l31.1.3.2.2.3.3.3.6.html) requires that ships constructed in or after 2009 should, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of sediments, facilitate removal of sediments, and provide safe access to allow for sediment removal and sampling, taking into account the Guidelines for sediment control on ships (G12). This also applies to ships constructed prior to 2009, to the extent practicable.

## 8.2 Procedure for safe tank entry

If it should be necessary sending a person into a tank for cleaning or taking water samples or for other purposes, the following should be noted:

* Due to the possibility that an enclosed space may have an oxygen deficient, flammable or toxic atmosphere, which will not support life, or involves risk of explosion, it is important establish that the risk and hazards have been eliminated and that the enclosed space is safe for entry.
* The procedures for Safe Tank Entry should be contained in the companies controlled Safety Management System (SMS) Manuals.

IACS Rec. 72 regarding confined space safe practice should be observed:

Only enter a confined space when a permit to enter has been issued and if you consider it is safe to do so, and then only remain in the inside for as long as it is necessary to carry out the work. It is the full responsibility of the owner of the confined space (i.e. ship, shipyard) to make and ensure that the confined space is safe to enter.

NOTE: Please be advised that until the BWM Convention will be amended with specific requirements on sediment handling the following procedures may be considered as sufficient: Manual cleaning of Ballast Water tanks at dry-docking.

# SECTION 9 – METHODS OF COMMUNICATION

Member States have the right to manage ballast water by national legislation. However, any ballast discharge restrictions should be notified to the Organization.

Coastal states have rights to define ballast water exchange areas and areas that exchanges are prohibited in their waters according to their national legislation. Any instructions or requirements of a ship should be provided in a timely manner and be clear and concise.

Also communication with Port State authority is important for implementation. Port State authority should consider the overall effect of ballast water and sediment discharge procedures on the safety of ships and those on board. Guidelines will be ineffective if compliance is dependent upon the acceptance of operational measures that put a ship or its crew at risk. Port States should not require any action of the master which imperils the lives of seafarers or the safety of the ship.

It is essential that ballast water and sediment management procedures be effective as well as environmentally safe, practicable, designed to minimise costs and delays to ship, and based upon these Guidelines whenever possible.

Port States should on request provide a visiting ship with any requested information relative to ballast water management and its potential effects with respect to harmful aquatic organisms and pathogens.

Any enforcement or monitoring activities should be undertaken in a fair, uniform and nationally consistent manner at all ports within the Port State. Where there are compelling reasons whereby nationally consistent procedures cannot be followed then deviations should be reported to the Organization.

Compliance monitoring should be undertaken by Port State authorities by, for example, taking and analysing ballast water and sediment samples to test for the continued survival of harmful aquatic organisms and pathogens.

Where ballast water or sediment sampling for compliance or effectiveness monitoring is being undertaken, Port State authorities should minimise delays to ships when taking such samples.

When sampling for research or compliance monitoring, the Port State authority should give as much notice as possible to the ship that sampling will occur, to assist in planning staffing and operational resources.

The master has a general obligation to provide reasonable assistance for the above monitoring which may include provision of officers or crew, provision of the ship’s plans, records pertaining to ballast arrangements and details concerning the location of sampling points.

Sampling methods for research and monitoring is the responsibility of the individual Port State. The Organisation welcomes information on new or innovative methods of sampling and/or analysis, and any relevant information should be provided to it.

Port States authorities should indicate to the master or responsible officer the purpose for which a sample is taken (i.e. monitoring, research or enforcement). In the event that harmful aquatic organisms or pathogens are found to be present in the samples, a Port State’s contingency strategy may be applied.

# SECTION 10 - DUTIES OF THE BALLAST WATER MANAGEMENT OFFICER

**Duties of the appointed officer in charge of ballast water management**

Previously mentioned, chief officer is responsible in ballast management. The second officer will take over the place of the chief officer by proxy. He/She will be executed this operation with supervision of master.

1. Ensure the safety of the vessel and crew
2. Ensure that the ballast water treatment procedures in ballast water management plan are followed and recorded.
3. Ensure suitable personnel and equipment are available for the fulfilment of the planned ballast water management operations
4. Prepare the ballast water declaration form prior to arrival in port
5. Be available to assist the port state control or quarantine officers for any sampling that may need to be undertaken
6. Maintain the ballast water record book.
7. For contingency measures where ballast exchange is required, ensure that the steps of the ballast exchange sequence are followed in the prepared order and according to the approved D-1 BWMP
8. For contingency measures ensure that the manholes of the specific tanks are opened prior to commencement of the flow-through method or instead, for tanks with no direct access to open deck the vent heads are removed. It is his responsibility to ensure that these are re-secured after completion of the operation

The Master must ensure that the ballast water management plan is clearly understood by the appointed officer and by any other vessel staff that may need to be involved.

The ballast water management officer must keep the Master advised on the progress of the ballast water management operations and any envisaged deviations from the agreed plan.

Should there be any doubt or if the management plan is not in line with the schedule, the Master shall be advised accordingly.

# SECTION 11 – RECORDING REQUIREMENTS

The ballast water management officer is to ensure that the Ballast Water Record Book and any other necessary documentation and forms are kept up-to-date.

The Ballast Water Record Book may be an electronic record book or may be integrated into another record book or system. Electronic record books shall be approved by the Administration taking into account the Guidelines for the use of electronic record books under the BWM Convention (resolution MEPC.372(80), as may be amended).

When carrying out any ballast water operation the details are to be recorded in the Ballast Water Record Book together with any exemptions granted in accordance with regulation B-3 or C-1. In recording these operations and exemptions, the Guidance on ballast water record-keeping and reporting (BWM.2/Circ.80/Rev.1, as may be amended) should be taken into account.

The Ballast Water Record Book entries shall be maintained on board the vessel for a minimum period of two years after the last entry has been made.

The control equipment of the ballast water treatment system is able to store data for at least 24 months. The requirements for type approval are that the control equipment should be able to display or print a record for official inspections as required. In the event the control equipment is replaced, means should be provided to ensure the data recorded prior to replacement remains available on board for 24 months.

A statement that any malfunction and use of any contingency measures shall be recorded in the BW Record Book.

Where a Port State requires information on ship’s ballast operations, relevant documentation should be made available to the Port State.

# SECTION 12 - CREW TRAINING AND FAMILIARIZATION

Appropriate members of the crew must be aware of what is expected of them and why. If crew members understand the reasons for the treatment of ballast water and associated sediments, they are more likely to ensure that is carried out effectively and efficiently. Bearing in mind the purpose of this plan, as explained earlier, it may be sufficient to provide an indication of where to search for relevant material. If further reading is available on board, it will be appropriate to refer to it here.

Crew members must be educated in the following topics by chief officers.

1. The reason for treatment of ballast at sea
2. Ballast water treatment methods
3. Ballast water treatment systems
4. Safety considerations
5. The means of carrying out ballast water management on board.
6. The location of sampling points
7. The methods of sediment removal to be employed, and how frequently it should be carried out
8. The ballast water record book and maintenance of records

# APPENDIX 1

PLANS