

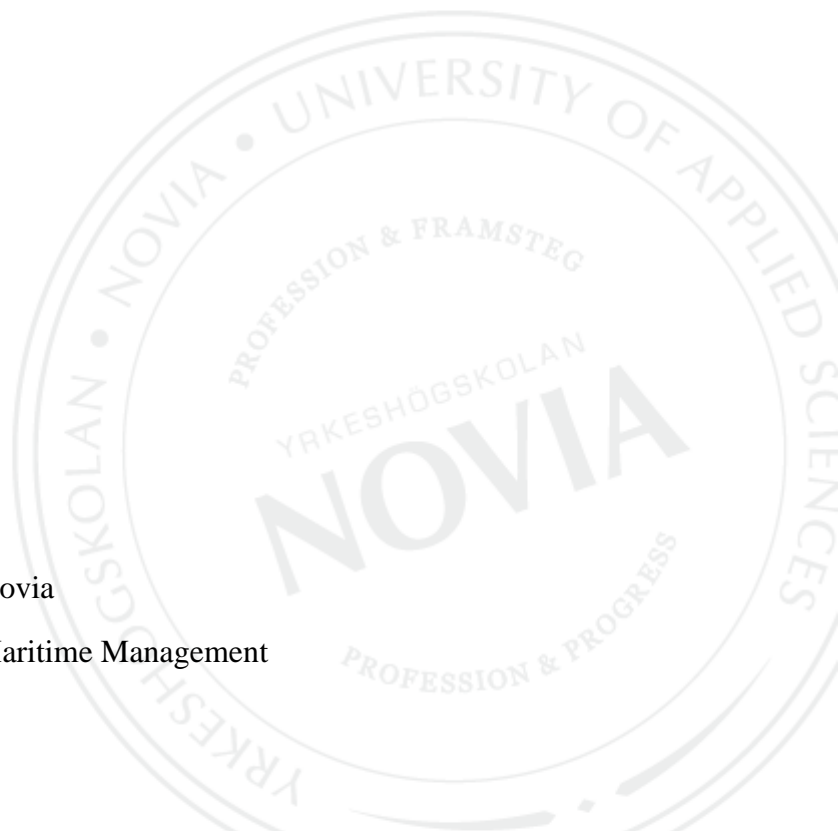
**Implementing the IMO Resolution
MEPC.127(53) *Guidelines for Ballast
Water Management and Development of
Ballast Water Management Plans (G4) in
tugs and barges***

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Abstract

This is a thesis about implementing Marine Environment Protection Committee's Resolution MEPC.127(53) Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4) and special requirements needed for Ballast Water Management Plans used on tugs and barges operating in the Baltic Sea area. An interview was performed with Special Advisor Ville-Veikko Intovuori, Finnish Transport Safety Agency (Trafi), who is in charge of reviewing and approving Ballast Water Management Plans (BWMP). The interview was used to discover what issues Trafi has about these types of vessels and the area they operate in that they would like to see answered or addressed in the BWMP. The issues were aimed at the balance of the tugs, responsibilities of the vessel towing the barge and possible special regulations regarding the Baltic Sea area.

A BWMP was then prepared for 9 tugs and 3 barges operated by Alfons Håkans that are classed by Trafi and sent for review. All the plans were approved and put to use on the vessels they were prepared for.

Language: English

Keywords: Ballast Water Management

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1 Glossary

MEPC – Marine Environment Protection Committee

IMO – International Maritime Organization

BWMP – Ballast Water Management Plan

Trafi – Finnish Transport Safety Agency

BWMO – Ballast Water Management Officer

BWMC - International Convention for the Control and Management of Ships' Ballast Water and Sediments

2 Introduction

In July of 2017, while I was working for the Finnish Transport Safety Agency as a trainee for the vessel technical and operational sector, I was approached by Alfons Håkans to prepare ballast water management plans for 11 of their vessels: Barges Scanbarge, Bison and Panda and tugs Apollon, Artemis, Fram, Hector, Kraft, Neptun, Porin Karhu, Viikari and Iso-Pukki. After consulting with Trafis lawyers if there were any conflict of interest in this case that would forbid me from doing this assignment, I agreed upon this and begun preparing these plans. The time schedule for this assignment was strict as it was to be mandatory for all vessels to have these plans by 8.9.2017, leaving me with roughly two months to educate myself with the regulations regarding this, familiarize myself with the generation of ballast water management plan and identifying the risks that were involved when performing ballast water exchange.

To ensure the quality of the ballast water management plans to be created, I came up with two questions that I would seek answers to. The questions were:

- What shipping company must take into an account when making ballast water management plans for its fleet.
- What special concerns there are in the case of barges and tugs that the regulations may not take into account.

3 Legal Background

3.1 International Convention for the Control and Management of Ships' Ballast Water and Sediments

The International Maritime Organization (IMO) adopted the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWMC) in 13.02.2004, and it entered into force on 08.09.2017. In this convention IMO recognizes the threat posed by invasive aquatic species to marine environments and the possible financial impact. The Convention aims to reduce the threat of these invasive species by first implementing requirements for ballast water and sediment management and aiming to

make ballast water treatment facilities mandatory equipment onboard all vessels some time in the future. The convention is divided into 5 annexes:

Annex: Section A General provisions

Annex: Section B Management and Control Requirements for Ships

Annex: Section C Additional Measures

Annex: Section D Standards for Ballast Water Management

Annex: section E Survey and Certification Requirements for Ballast Water Management.

While all of these annexes are relevant in making and understanding the need for BWMP, annexes B and D are the ones that bear the most significant importance in actually making the BWMP as they include information and regulations that one needs to take into account in the plan itself.

3.2 Resolution MEPC.127(53)

3.2.1 Application

On 08.09.2017, as BWMC came into force, it became mandatory for all vessels to have a ballast water management plan (BWMP) prepared following the instructions given in Marine Environment Protection Committee's Resolution MEPC.127(53) Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4) . Vessels that are excluded from this are:

- Vessels not designed or constructed to carry ballast water .
- Military Vessels.
- Vessels that operate in the sea area belonging to a single nation.

3.2.2 Purpose of MEPC.127(53)

Many different types of species live in the sea, and when a vessel intakes ballast water to tanks, these species can get carried away with the ballast water to anywhere on the globe. These foreign species present a real threat to marine environments in which they are not present normally. As they may not have natural predators they may start to flourish better than the local species begin to surpass them, thus possibly causing serious problems in the local biome. Ballast water is however crucial in shipping for controlling the balance of the

ship and for the safety of the vessel, and thus simply forbidding the use of ballast water is not an option.

MEPC.127(53) aims to standardize ballast water operations to prevent the transportation of harmful foreign species between sea areas without affecting the safety and stability of vessels. This is accomplished by making it mandatory for vessels to have a Ballast Water Management Plan, so that all ballast water operations are handled carefully and thoughtfully to ensure the safety of the marine environment by following guidelines presented in MEPC.127(53).

3.2.3 General Guidelines

The guidelines provided in MEPC.127(53) are very general in nature. This is due to the impracticality of taking into the account the wide range of different types of vessel existing in the shipping industry. As such the guidelines only address the most common issues that may rise when creating the ballast water management plan for a vessel and to make the plan meet the requirements it should be tailored to suit each ship uniquely. The requirements for plans are defined in MEPC.127(53) G4 part B, section 2.2 as such:

- The plan must be realistic, practical and easy to use
- Must be understood by ship's personnel engaged in ballast water management, both onboard and ashore
- Evaluated, reviewed and updated as necessary.
- Consistent with the operational ballasting requirements of the ship.

3.2.4 Mandatory provisions

In addition, the plan must follow the seven mandatory provisions listed in section 3.1 of MEPC.127(53) G4 part B:

1. detail safety procedures for the ship and the crew associated with Ballast Water Management as required by the Convention;
2. provide a detailed description of the actions to be taken to implement the Ballast Water Management practices required by the Convention;

3. detail the procedures for the disposal of sediments at sea and to shore;
4. include the procedures for co-ordinating 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. designates 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;
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 should be provided.

3.3 Resolution MEPC.124(53)

The IMO Resolution MEPC.124(53) Guidelines for Ballast Water Exchange (G6) gives a more detailed description regarding ballast water exchange, describing to a better detail the three exchange methods recognized by The International Maritime Organization (IMO) and recognizes several safety risks regarding ballast water exchange. Also, requirements for crew training are introduced in this resolution.

Ballast water exchange is a process that takes place when moving from a sea area to another by changing the old ballast water from the previous sea area to water from the new one. This is to prevent the hazardous foreign species from travelling to a new habitat as well as to preserve the stability conditions of the vessel. To ensure this regulation D-1 of the ballast water convention requires that a volumetric exchange of 95% must have taken in place. There are three accepted methods for ballast water exchange as identified in MEPC.124(53) that accomplish the required exchange rate.

3.3.1 Sequential Method

In sequential method the ballast water tank is first emptied by removing the existing water out by pumping or other matter and then filling it back again.

3.3.2 Pumping-Through method

Pumping-through method, also called as the flow-through method in the MEPC.127(53) and MEPC.124(53), is a method in which one pumps ballast water into a full tank so that the water is also pushed out from the overflow piping or similar arrangement. The tanks must have had water pumped three times its volume to accomplish the 95% volumetric exchange criteria. Pumping less than this amount may be accepted if it can be proven that the ballast water volumetric exchange has been 95%.

3.3.3 Dilution method

In dilution method the tank is emptied and filled at the same time. Filling is done from the top and removal of older water from the bottom of the tank while maintaining similar flow rates and keeping the water level constant in the tank. As with pumping-through method, the dilution method is also required to exchange three times the volume of the tank to accomplish the required 95% exchange rate, unless evidence has been provided that less is enough to accomplish this.

4 Preparation

In preparation of making the ballast water management plan the regulations in MEPC.127(53) and MEPC.124(53) were thoroughly read multiple times to understand the goal and scope of it, studied the drawings for the vessels that needed the BWMP and talked with the vessel operator about their wishes regarding the BWMP. To further improve the quality of the plan, an interview was performed to special advisor Ville-Veikko Intovuori from Finnish Transport Safety Agency who is in charge of reviewing and approving the ballast water management plans. The interview was performed orally in a private setting in the summer of 2017 and discussions were aimed at the potential concerns that Trafi would have regarding tugs and barges operating in primarily in the Baltic Sea.

The concerns raised for tugs resolved on potential balance issues that may rise from ballast water collected on the deck from using pumping-through method and Trafi would want to see this issue addressed in the plan. For barges Trafi was concerned about the

actual application of the plan since there is no crew onboard and thus wanted the plan to acknowledge this and write the plan to suit this. Baltic Sea offers much bigger challenges to address than the vessel types since nowhere in the Baltic Sea is it possible to follow the actual regulations for the ballast water exchange, as pointed out by Special Advisor Intovuori. Also, since all vessels would be using the pumping-through method there was a safety concern regarding the possible ballast water on deck freezing.

In addition, Special Advisor Intovuori wished for the sediment stuck on anchor and anchor chain to be addressed.

5 Making the BWMP

5.1 General

Following discussion with the operator, it was decided early on that all the vessels would be using the pumping-through method as it required the least effort onboard to use. Ballast water purification was also discussed about but deemed impractical and too expensive for these vessels.

Following this I started to identify possible risks resulting from and during the pumping-through method and addressing them in the plan. At this point I noticed a problem regarding the availability of air pipe plans, which are very important for the BWMP when the main ballast water control method is the pumping-through method. Since most of the vessels in question were venerable, the air piping diagrams were not always properly digitalized and thus not available to be added to the plan itself. These diagrams would have been paramount in description of the ballast water system as well as helping in the safety, but after discussing this matter with Mr. Intovuori, he deemed it suitable if the BWMP recognized this problem and made it mandatory for crew onboard to learn the locations of the airflow outlets. Since the airflow outlets also acted as sounding points for the Authorities to take samples, it served as a description for the sampling points as well.

Some other safety issues addressed in the sections 7. Safety procedures for the ship and the crew and 8. Operational- and safety restrictions of the BWMP that were made included possible weather phenomena that could affect the safety and stability of the vessel, responsibilities of the master to ensure the safety of the vessel and crew, entrance to tanks and the engine room during ballast water operations and safe planning of the ballast water operations.

For sediment control it was decided that the sediment gathered in the ballast water tanks would be removed when at a shipyard to a shore facility by opening the ballast water tanks and cleaning them up. In an event where it is mandatory to remove sediment at the sea, the tanks will be washed and sediment drained out through a pipeline. In the case of raising the anchor, both the anchor and anchor chain should be washed as it is raised, if possible.

5.2 Structure for the ballast water management plan

The structure of the ballast water management plans that were created followed the example provided in the MEPC.127(53):

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6. Operation of the ballast water management system
7. Safety procedures for the ship and the crew
8. Operational- and safety restrictions
9. Description of the method used onboard for ballast water management and sediment control
10. Procedures for disposal of sediments
11. Methods of communicating
12. Duties of the ballast water management officer
13. Recording requirements
14. Crew training and familiarization
15. Exemptions
16. Approving Authority

On the cover leaf of the BWMP were presented the vessels particulars, designated ballast water management officer and the primary method for ballast water exchange.

5.3 Tugs

Following the concerns raised by Trafi about the possible stability issues caused by ballast water trapped on deck of the vessel, I conducted a research about the stability of these vessels. This was done by reviewing stability calculations provided for the vessels as well as comments from the operator. According to all available information and the statements from the operator, it was clear that the tugs in question had no risk of losing balance from ballast water on deck since the vessel were designed to be over stable. The potential risk was nevertheless acknowledged in the plan but deemed not to be an issue. The risks posed by stress and shearing force were also discussed and deemed a non-issue due to the vessels limited size. It is also worth pointing out that tugs do not engage in ballast water exchange regularly.

5.4 Barges

As barges are vessels that do not have any crew onboard, but are towed by another vessel, it provides a challenge regarding the BWMP for these vessels as the vessel performing the tow may not be familiar with the barges ballast water operations. To address this the plan was made to be as instructive as possible so that the vessel who is towing the barge can get a quick understanding of the ballast water management for the barge. Additional drawings were included, and it was made mandatory for the crew of the towing vessels to familiarize themselves with the systems included in the ballast water management for this vessel, such as the location of the tanks, pumps and their capacity. It is also worth acknowledging for the crew operating the barge that while the ballast water tanks are large and located all around the barge, the pumps designated for ballast water exchange are not very effective and the full exchange of the ballast water may take several days when using the pumping-through method.

5.5 The Baltic

Special Advisor Intovuori noted that the Baltic Sea does not provide suitable conditions for the requirements of ballast water exchange written in the section B-4 of the ballast water convention. The regulations in that convention are:

- Whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, considering Guidelines developed by IMO.

- In cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and at least 200 metres in depth.
- In cases where the ship is unable to conduct ballast water exchange as above, ballast water might be requested to be changed in specific ballast water changing areas by local authorities

This may prove somewhat problematic for some vessels, but since the vessels in question for these plans do not regularly participate in ballast water exchange it is unlikely that this would provide any actual problems for these vessels. In the case when such need arises that the vessels need to exchange ballast water, it must be done in accordance to the instructions of the port state or other local authorities. To ensure a smooth and easy communication with the authorities, the ballast water management officer of the vessel should before commencing these operations be in contact with the named authorities and be prepared to explain their plan for the ballast water exchange and follow their instructions on the time and location where to perform it.

IMO has also identified the issue caused by sea areas that do not meet the requirements presented in the section B-4 of the ballast water convention and addressed it in a circular *Application of the Convention to ships operating in sea areas where ballast water exchange in accordance with regulations B-4.1 and D-1 is not possible* (BWM.2/Circ.63) for BWMC. This annex gives the possibility for the port states to establish areas, where ballast water exchange is possible even if it does not meet the requirements of B-4. If ballast water exchange is to be done in those areas, it must be done with the permission and the instructions provided by the Port State in charge of that area.

Another concern raised by Special Adviser Intovuori were the freezing temperatures in the northern Baltic that can cause the ballast water pumped out to freeze on deck. This is a very real concern as the frozen ballast water on deck can cause several problems. First it may freeze on walkways and be hazardous for the crew working onboard. Second it may gather up quickly, cause stability issues that may not have been issues when in liquid form. Third it may block the air outlets from which the water is pumped out, causing overpressure in the tanks and also freeze deck equipment in place. As the risks are clear and easily countered, it does not invalidate the pumping-through method as the primary method for ballast water exchange. As the vessels have already operated in

the northern Baltic before, they are prepared to counter the threat posed by ice on the deck by regularly inspecting the amount of ice gathered and disposing it in a suited manner.

6 Conclusion

A good ballast water management plan is crafted for one vessel in particular. It identifies most of the common risks that are associated for the ballast water management method used onboard as well as risks that are unique to the operating area and that vessel in general. The plan should not be too massive as too much information may crowd the plan with unnecessary information that may take focus away from the more common risks.

All the plans I created for this Assignment were submitted by the end of August 2017 and reviewed by Special Adviser Ville-Veikko Intovuori. All of the 12 plans were approved by 8.9.2017. The plans followed the general instructions given in MEPC.127(53) and MEPC.124(53) and addressed the issues raised by Trafi concerning these vessels. Should any of these vessels have a need to update their plans they can add the new information to the existing plan, but the plan needs to get a new approval from Trafi. Same is true if the plans undergo any changes.

7 Sources

International Convention for the Control and Management of Ships' Ballast Water and Sediments

Marine Environment Protection Committee's Resolution MEPC.127(53) Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4)

The IMO Resolution MEPC.124(53) Guidelines for Ballast Water Exchange (G6)

IMO Circular BWM.2/Circ.63 Application of the Convention to ships operating in sea areas where ballast water exchange in accordance with regulations B-4.1 and D-1 is not possible

IMO Circular BWM.2/Circ.14 General Guidance on Voluntary Interim application of the D1 Ballast Water Exchange Standard in the North-East Atlantic and the Baltic Sea

IMO Circular BWM.2/Circ.22 General Guidance on Voluntary Interim application of the D1 Ballast Water Exchange Standard by vessels leaving the Baltic Sea and transiting through North-East Atlantic to other destinations

IMO Circular BWM.2/Circ.39 General Guidance on Voluntary Interim application of the D1 Ballast Water Exchange Standard by vessels operating between Mediterranean Sea and the North –East Atlantic and/or the Baltic Sea

HELCOM, 2014: HELCOM Guide to Alien Species and Ballast Water Management in the Baltic Sea

Special Advisor Ville-Veikko Intovuori, Finnish Transport Safety Agency – Trafi

Captain Kimmo Lehto, Alfons Håkans

Technical Superintendent Kari Rautalin, Alfons Håkans

Attachment

Presented here is an example ballast water management plan for a tug operating in the Baltic Sea. It has no drawings or plans of the vessel and any vessel specific information has been removed.

Attachment 1: BALLAST WATER MANAGEMENT PLAN

Vessel Name

Flag:

Port of Registry:

IMO No.:

Length (BP):

Breadth:

Draught:

Call Sign:

Total Ballast Water Capacity:

Gross Tonnage:

OiC in ballast operations:

Primary Ballast Water Management method used on board:

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1 Introduction

This plan is written in accordance with the requirements of Regulation B-1 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention) and the associated Guidelines.

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) (The Guidelines). It provides standard operational guidance for the planning and management of ships' ballast water and sediments and describes safe procedures to be followed.

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

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

2 Purpose of the Ballast Water Management Plan

Ballast water is essential to control trim, list, draught, stability or stresses of the ship. However, ballast water may contain aquatic pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas.

Ballast Water Management Plan is to avoid and/or minimize the uptake and discharge of harmful aquatic organisms, pathogens and sediments in Ballast Water Operations.

This plan must be kept available for inspection on request by an authorized authority.

3 Plans/Drawings of the Ballast Water System

VOID

4 Description of the Ballast System

The vessel is equipped with 3 ballast tanks, pipes, standard valves and a ballast water pump.

Two of the ballast tanks are located in the midships and one in the aft.

All of the valves onboard are manually operated valves that are located near the pumps.

Ballast water pump is located in the engine room with a capacity of 25m³/h

5 Ballast Water Sampling Points

Sampling of ballast water is primarily a matter for the authorized authority, and there is unlikely to be any need for crew to take samples except at express request, and under the supervision of an authorized authority.

Ballast water samples from each tank can be taken through sounding pipes.

The crew must be made aware of the locations of the ballast water sampling points so that they may provide assistance in the sampling if asked to by an authorized authority.

6 Operation of the Ballast Water Management System

Ships performing Ballast Water exchange shall do so with the efficiency of 95 percent volumetric exchange of Ballast Water. For ships exchanging ballast water by pumping-through method, pumping through three times the volume of each ballast water tank shall be considered to meet the standard described. Pumping through less than three times the volume may be accepted provided the ship can demonstrate that at least 95 percent volumetric exchange is met.

Because of the possibility that partial exchange may encourage regrowth of organisms, ballast water exchange should only be commenced in any tank if there is sufficient time to complete the exchange to comply with the required 95% volumetric exchange.

In addition, all ships using ballast water exchange should:

-Whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, taking into account Guidelines developed by IMO.

-In cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and at least 200 metres in depth.

-In cases where the ship is unable to conduct ballast water exchange as above, ballast water might be requested to be changed in specific ballast water changing areas by local authorities

It should be noted that the requirements for minimum distance to the nearest land and the minimum depth to perform ballast water exchange do not meet anywhere in the Baltic Sea. When operating in that sea area, the ballast water exchange is not recommended and possible ballast water procedures should be conducted in the port to minimize the spread of alien species. Ballast Water Officer should be in contact with the port and Port State Administration when planning to exchange ballast water.

When loading ballast water, 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 minimized or, where practicable, avoided in areas and situation such as:

- Areas identified by the port state in connection with advice proved by ports.
- In darkness when organisms may rise up in the water column.
- In very shallow water.
- Where propellers may stir up sediment
- Where dredging is or recently has been carried out.

The vessel is not equipped with arrangements necessary to meet Ballast Water Performance Standards.

When hoisting the anchor both the chain and the anchor should be washed

7 Safety Procedures for the ship and crew

During ballast operations, the stability and the strength of the vessel can be influenced. Therefore, all ballast operations are to be carried out only after careful planning and after specific stability calculation. The weather forecast should be referenced when making preparations to begin ballast water operations to see if there are severe winds, storms or other extreme weather phenomenon expected and delay or cancel the intended operation until a more suitable time to perform it is present.

When performing ballast water management using the pumping-through method extra attention should be paid to water accumulation on the deck that may cause stability issues or freeze in low temperatures.

Reference should be made to the ISM manual.

If the master of the vessel reasonably decides that performing ballast water exchange would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition, the vessel is not required to perform ballast water exchange.

It should be noted that tugs are designed to be over-stable and are unlikely to suffer any stability issues when changing ballast water.

Before crew member entry into the tank, entry permit must be issued.

8 Operational or Safety Restrictions

It is not allowed to enter into tanks without a permit. As the pump is situated in the engine room, entrance to the engine room should be done with care.

9 Description of the methods used on board for Ballast Water Management and Sediment control

There are three accepted methods for ballast water exchange:

9.1 Sequential method

A process by which a ballast tank intended for the carriage of ballast water is first emptied and then refilled with replacement ballast water to achieve at least a 95 percent volumetric exchange.

9.2 Pumping-through method

A process by which replacement ballast water is pumped into a ballast tank intended for the carriage of ballast water, allowing water to flow through overflow or other arrangements.

9.3 Dilution method

A process by which replacement ballast water is filled through the top of the ballast tank intended for the carriage of ballast water with simultaneous discharge from the bottom at the same flow rate and maintaining a constant level in the tank throughout the ballast exchange operation.

The method primarily used on board the vessel is the **PUMPING-THROUGH METHOD**

10 Procedures for the disposal of Sediments

Tanks are normally opened at shipyard and sediment, if any, disposed to shore facilities. If there is a need to remove sediment while at sea, this can be done by opening up the tank and washing the bottom of the tank with a firehose and pushing the sediment out through the pumps. Restrictions for ballast water discharge apply (Regulation B-4) also when discharging sediments to sea.

11 Methods of Communication

All ballast pumping is normally done from the engine room. Handheld radio-telephones are available for internal communication on board the vessel. Communication to offshore is done via email, telephone, radiophone or any other pre-determined method.

Port State Authority may request the Ballast Water Reporting Form to be presented on the arrival. The Ballast Water Reporting Form is an appendix 3.

12 Duties of the Ballast Water Management Officer

Chief Officer of the vessel is the vessels designated Ballast Water Management Officer. The ballast water management officer is also responsible to ensure that the ballast water record book and any other necessary documentation is maintained. The BWMO is available to assist the inspection officers authorized by a party for any sampling that may need to be undertaken. Duty officer is in charge implementing ballast water plan according to chief officers order.

13 Recording requirements

According to Regulation B-2, ship must have a Ballast Water Record book to record when ballast water is taken on board; circulated or treated for Ballast Water Management purposes; and discharged into the sea. It should also record when ballast water is discharged to a reception facility and accidental or other exceptional discharges of ballast water. A note should also be made into the ballast water record book if the vessel was not able to exchange ballast water and the reason why.

14 Crew Training and Familiarization

The Ballast Water Management Officer is responsible that duty officers are familiarized with the following requirements:

- General nature regarding Ballast Water Management
- Training and information on ballast water management practices
- Ballast water exchange

-General safety considerations

-The ballast water book and maintenance records

-Safety aspects associated with the particular systems and procedures used on board the ship which affect the safety or human health of the crew and passengers and/or the safety of the ship.

-Precautions for entering tanks for sediment removal

15 Exemptions

Not applied

16 Approving Authority

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