

Ballast Water Management Plan

To meet the recommendations of the

International Maritime Organization
Assembly Resolution A.868(20)

Guidelines for the control and
management of ships' ballast water
to minimise the transfer of harmful
aquatic organisms and pathogens

adopted on 27th November 1997

M.V. SHIPS NAME

Disclaimer: This manual prepared by Captain Pawanexh Kohli and incorporates his experience and open domain knowledge and designs of ships he has commanded in the past. Further, extracts of generic information from relevant national / international authorities has been sourced.

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Ballast Water Management Plan

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

One of the major threats to native biological diversity is now acknowledged by scientists and governments to be biological invasions caused by alien invasive species. The impacts of alien invasive species are immense, insidious, and usually irreversible. They may be as damaging to native species and ecosystems on a global scale as the loss and degradation of habitats.

Alien invasive species means an alien species, which becomes established in natural or semi-natural ecosystems or habitat, is an agent of change, and threatens native biological diversity.

Alien species (non-native, non-indigenous, foreign, exotic) means a species, subspecies, or lower taxa occurring outside of its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans) and includes any part, gametes or propagate of such species that might survive and subsequently reproduce.

Biological diversity (biodiversity) means the variability among living organisms from all sources including, inter-alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

The scope and cost of biological alien invasions is global and enormous, in both ecological and economic terms. Alien invasive species are found in all taxonomic groups: they include introduced viruses, fungi, algae, mosses, ferns, higher plants, invertebrates, fish, amphibians, reptiles, birds and mammals. They have invaded and affected native biota in virtually every ecosystem type on Earth. Hundreds of extinctions have been caused by alien invasive.

The ecological cost is the irretrievable loss of native species and ecosystems.

The discharge of ballast water together with hull fouling has led to unplanned and unwanted introductions of harmful aquatic organisms, including diseases, bacteria and viruses, in marine and freshwater systems. Ballast water is now regarded as the most important vector for Trans-oceanic and inter-oceanic movements of shallow-water coastal organisms. Factors like environmental pollution and habitat destruction can provide conditions that favor alien invasive species.

Appropriate initiatives to reduce the problems of alien invasive arising from ballast water discharges and hull fouling are being implemented. These include: better ballast water management practices; development of national ballast water programs; research, sampling and monitoring regimes; information to port authorities and ships' crews on ballast water hazards.

Few countries have developed the comprehensive legal and institutional systems that are capable of responding effectively to these new flows of goods, visitors and 'hitchhiker' species.

During the last decades, ballast water discharges have increased throughout the world in most of the major ports. Discharge volumes are considerable high in some cases with great volumes of ballast water. Ships have been recognized since about 50 years as a major vector for the introduction of non-indigenous and harmful organisms.

Ballast water often originates from ports and other coastal regions, which are rich in planktonic organisms. It is variously released at sea, along coastlines, and in port systems; As a result, a diverse mix of organisms is transported and released around the world with the ballast water of ships.

Studies carried out in several countries have shown that many species of bacteria, plants and animals can survive in a viable form in the ballast water and sediment (with reduced light and oxygen) carried in ships, even after journeys of several weeks duration. Over a time they will be reduced, but they may live longer than 100 days in such water. 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.

Presently, ballast water exchange is the only effective management tool to reduce the risk of ballast-mediated invasion. Ballast water exchange involves replacing coastal water with open-ocean water during a voyage. This process reduces the density of coastal organisms in ballast tanks that may be able to invade a recipient port, replacing them with oceanic organisms with a lower probability of survival in near shore waters.

Ballast water exchange is the recommended measure by IMO. However, it is important to recognize two shortcomings of this procedure. First, the ability of safely conduct ballast water exchange depends upon weather and sea surface conditions, stability etc. And it is not always possible to perform an exchange.

Second, the ballast water exchange is not 100% efficient, as not all organisms are removed by the exchange. Some can remain in the sediments that remain in the tank.

Objective & Guidelines

Objectives of the Ballast Management System

1. Minimize risk of introducing harmful aquatic organisms and pathogens & associated sediment from ship's ballast water.
2. Promote awareness of risk to environment and possibility of contamination due to discharge of ballast water.
3. Training and education in management and treatment and maintenance of appropriate records.
4. Safe, effective procedures for Ballast operations and facilitate environmentally safe disposal of ballast tank sediments.

General Guidelines

Precautionary Practices:

1. Minimize Uptake-
 - a. In Areas known to contain potentially harmful organisms, sediment or pathogens.
 - b. In Darkness when bottom-dwelling organisms tend to rise.
 - c. In Shallow waters where propellers or strong currents may stir up sediment.
2. Carry out routine cleaning of ballast tanks to remove sediments when possible.
3. Avoid unnecessary discharge of Ballast water in ports. Plan ahead.

Ballast Water Exchange:

1. Where possible, exchange of ballast water should take place in deep water, open ocean as far as possible from shore.
2. Where above is not possible, requirements developed in regional agreements may be in operation - take note.
3. When flow through method is used, minimum three times the tank volume should be pumped through the tank.
4. When sequential method of exchange is used, all old ballast water should be pumped out until suction is lost.
5. When ballast exchange is not possible, follow other ballast exchange options approved by the state.
6. Keep Ballast Water Exchange Form ready for Port State Authority [Appendix I of IMO Res A.868 (20)]

Possible Methods:

1. *Sequential Exchange Method:* Ballast tanks are pumped out and refilled with clean water. See safety below.

2. *Flow-through Method*: Ballast tanks are simultaneously filled and discharged by pumping in clean water. In this method the tank is over flowed through air pipes and is not recommended on this vessel.
3. *Discharge to reception facilities*: May be provided by port State and where appropriate can be utilized.
4. *New Technology treatments*: Filtration, UV disinfecting, chemical or other acceptable treatments

Safety Considerations:

During Ballast operations, following should be taken into account-

1. Stability – Keep in mind free surface created during exchange operations.
2. Accretion of ice has additional effect on vessel stability.
3. Shear forces, Bending Moments – Permissible seagoing strength limits should never be exceeded.
4. Draft – Minimum, maximum drafts and associated trim condition will change.
5. Weather – in areas of frequent weather changes, cyclones and in heavy icing conditions take allied precautions.
6. Contingencies such as pump failure, loss of power, deteriorating weather.
7. Avoid exchange in freezing weather conditions as air pipes and other openings may be frozen.
8. Avoid over- and under-pressurization of tanks. Monitor exchange with regular soundings.

Recording and Reporting:

1. All ballast operations to be recorded in “Ballast Operations log”.
2. Details as required on Ballast reporting form for Port State Authority to be maintained.
3. Check Domestic laws, regulations before visiting Ports – Guide to Port Entry, etc.

CAUTION

The function of the Ballast Water Management Plan is to assist in complying with quarantine measures intended to minimise the risk of transplanting harmful aquatic organisms and pathogens from ship’s ballast water and associated sediments, while maintaining ship safety.

As part of this function the plan will provide information to quarantine officers who wish to learn about a ship’s ballast handling system, or to confirm that ballast management has been effectively planned.

The plan should not be used or regarded as a guide to ballasting. Training and shipboard operational practices are already well established.

Section 1 Ship Particulars

SHIP'S NAME M.V. SHIPS NAME		SHIP TYPE Refrigerated Carrier	
PORT OF REGISTRY Registry		OWNER Owner Name	
FLAG Pisxo		INTERNATIONAL CALL SIGN P X K O 2	
IMO NUMBER 12345678		GROSS TONNAGE 16108	
LENGTH 188.82 m	BEAM 29.0m	BALLAST DRAUGHT 6.47m	SUMMER DRAUGHT 8.77m
TOTAL WATER BALLAST CAPACITY (measured in cubic metres) 8075.6 m³			
TOTAL NUMBER OF SEGREGATED BALLAST TANKS ON BOARD Eighteen (18) ballast tanks			
LIST OF WATER BALLAST TANKS, AND CAPACITY OF EACH			
<u>Compartment Name</u>	<u>m³ (100%)</u>	<u>Compartment Name</u>	<u>m³ (100%)</u>
Fore Peak Tank	541.89	W. B. Tank 4 Port	501.81
Deep Tank 1 Port	321.76	W. B. Tank 4 Starboard	501.81
Deep Tank 1 Starboard	321.76	Double Bottom 2 Port	289.53
Deep Tank 2 Port	255.22	Double Bottom 2 Starboard	289.53
Deep Tank 2 Starboard	255.22	Double Bottom 3 Port	539.35
W. B. Tank 2 Port	451.25	Double Bottom 3 Starboard	539.35
W. B. Tank 2 Starboard	451.25	Double Bottom 4 Port	646.20
W. B. Tank 3 Port	486.32	Double Bottom 4 Starboard	646.20
W. B. Tank 3 Starboard	486.32	After Peak Tank	550.83
TOTAL BALLAST PUMPS 2 Pumps – rated capacity 250 m³ per hour each.			
APPOINTED BALLAST WATER MANAGEMENT OFFICER Chief Officer (1st Mate)			

Section 2 **Explanation of need for ballast water management, and reporting to port states**

Introduction

Studies carried out in several countries have shown that many species of bacteria, plants and animals can survive in a viable form in the 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 ships 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.

Requirements

Some states have established controls on the discharge of ships' ballast water that will minimise the potential for colonisation of their rivers and estuaries by non-native species. The preferred option is mid-ocean ballast water exchange prior to arrival. Accordingly, the countries most concerned have promulgated advice to ships for ballast management, together with a request for their co-operation in applying the techniques voluntarily. Standard procedures have been developed that will be accepted by quarantine authorities as achieving the level of acceptability desired by the port state.

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.

IMO recommends that each ship should be provided with a Ballast Water Management Plan, detailing the way that the ship can comply with any measures demanded by a port state. Once it has been established that the management of ballast is necessary to meet the quarantine requirements of a port state, preparation for it should be treated with the same seriousness as preparation of a cargo plan. All concerned with the operation and safe passage of the ship can

thereby be assured that they are both protecting the marine environment and ensuring the safety of the ship and crew.

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. A suitable outline for such a log is provided in Section 9. 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.

Reporting to port states

Several countries have become aware of the potential, through discharge of ships' ballast water, for the transfer into their coastal areas of what are found to be harmful aquatic organisms. Governments have recognised that, before devising mandatory controls on ships, it is necessary to know the scale of what has, until very recently, been an unrecorded procedure.

Concerned countries have therefore introduced a requirement which, though often differing in detail, generally calls for ships to report in advance, to the national monitoring authority, how much ballast water will be on board on arrival, where it was taken on board, and whether a ballast management procedure has been followed. In most cases it is mandatory to make the report, even though the actual ballast exchange in mid-ocean (or other management procedure) remains voluntary.

To assist in this regard, wherever possible the plan contains the format of the relevant national reporting forms. The forms can be found in section 11 of this ballast plan.

CAUTION

The function of the Ballast Water Management Plan is to assist in complying with quarantine measures intended to minimise the risk of transplanting harmful aquatic organisms and pathogens from ship's ballast water and associated sediments, while maintaining ship safety.

As part of this function the plan will provide information to quarantine officers who wish to learn about a ship's ballast handling system, or to confirm that ballast management has been effectively planned.

The plan should not be used or regarded as a guide to ballasting. Training and shipboard operational practices are already well established.

Section 3 **Ballast water arrangements**

Tank arrangement, and tank capacities

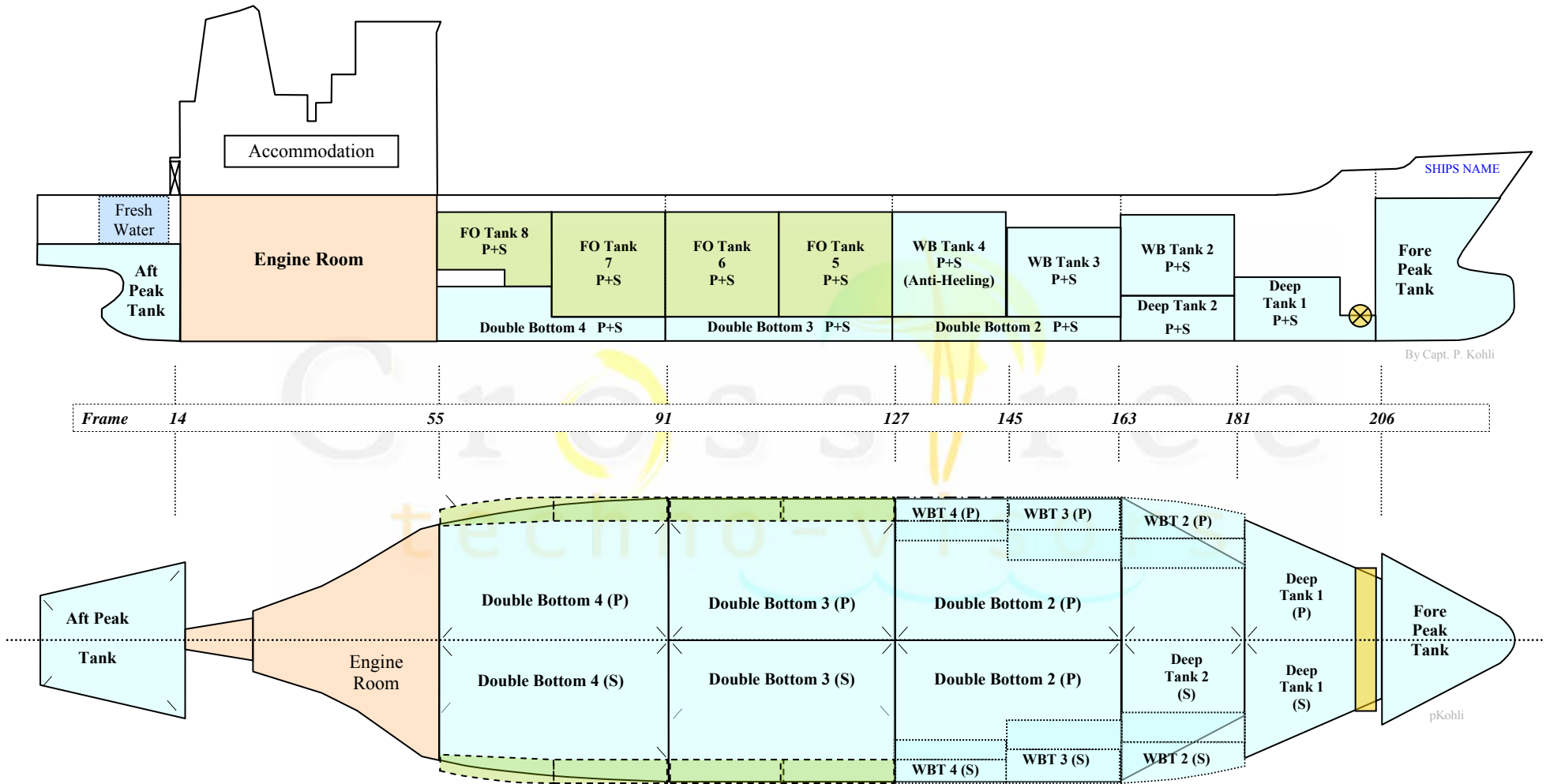
WATER BALLAST Tanks			
COMPARTMENT	Volume m³	Location	Frame No.
Fore Peak Tank	541.89	Forward Centre	206 – Fwd
Deep Tank 1 Port	321.76	Port	181 – 206
Deep Tank 1 Starboard	321.76	Starboard	181 – 206
Deep Tank 2 Port	255.22	Port	163 – 181
Deep Tank 2 Starboard	255.22	Starboard	163 – 181
W. B. Tank 2 Port	451.25	Port (Wings)	163 – 181
W. B. Tank 2 Starboard	451.25	Starboard (Wings)	163 – 181
W. B. Tank 3 Port	486.32	Port (Wings)	145 - 163
W. B. Tank 3 Starboard	486.32	Starboard (Wings)	145 - 163
W. B. Tank 4 Port	501.81	Port (Wings)	127 – 145
W. B. Tank 4 Starboard	501.81	Starboard (Wings)	127 – 145
Double Bottom 2 Port	289.53	Port	127 – 163
Double Bottom 2 Starboard	289.53	Starboard	127 – 163
Double Bottom 3 Port	539.35	Port	91 – 127
Double Bottom 3 Starboard	539.35	Starboard	91 – 127
Double Bottom 4 Port	646.20	Port	55 – 91
Double Bottom 4 Starboard	646.20	Starboard	55 – 91
After Peak Tank	550.83	Aft Centre	Aft – 14
TOTAL WATER BALLAST	8075.56 m³ in 18 Tanks		

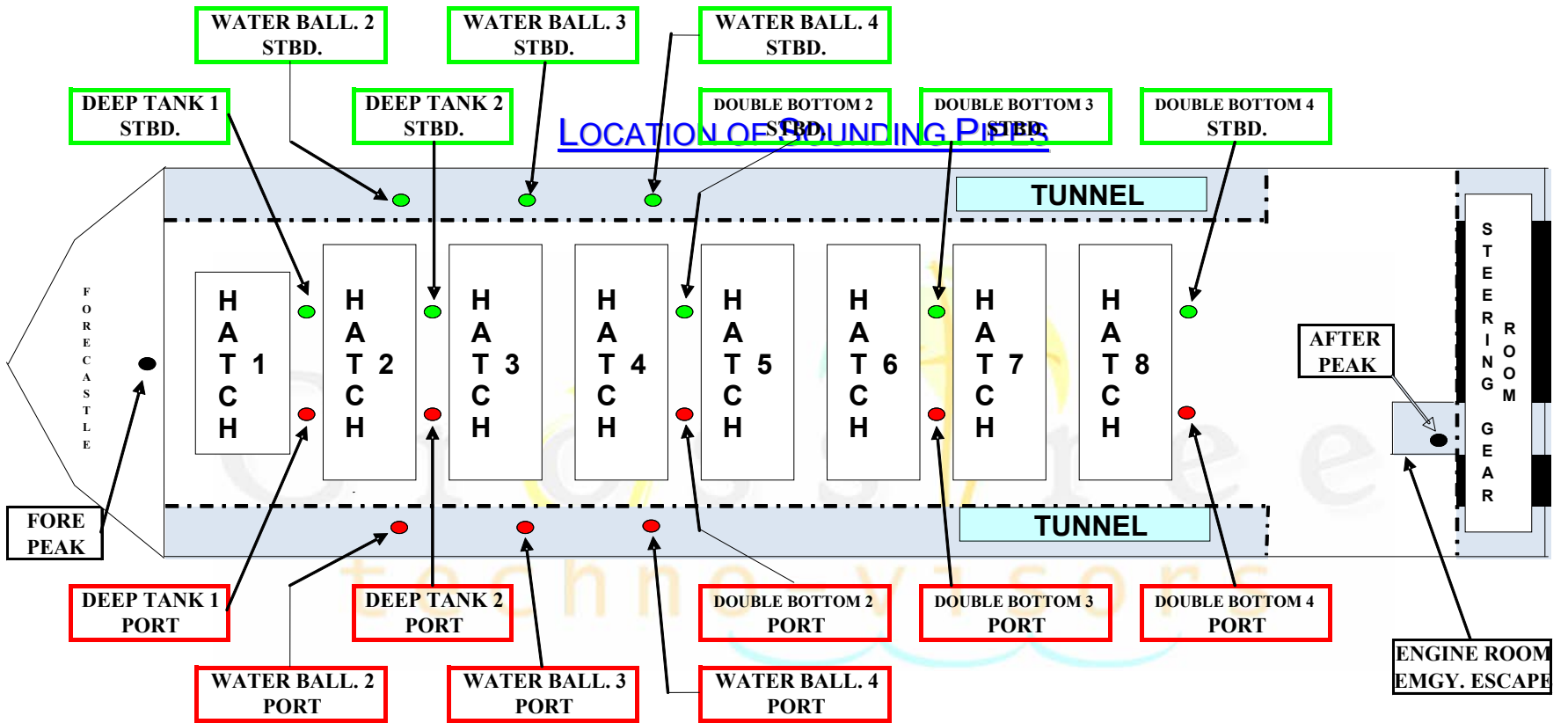
Sampling Points:

Individual Sounding Pipes. Where this does not suffice, use the Manholes for individual tanks. See Vessel Plans for locations.

Following Schematic Diagrams will assist in understanding the general arrangement of tanks on board, the location of sounding ports, manholes, the ballast pipe line system and the line diagram in the Engine Room. Note: these are schematic or block diagrams and not to scale. The original ship's certified plans should be consulted for scale drawings.

SCHEMATIC ARRANGEMENT OF BALLAST TANKS





WATER BALLAST (SPECIFIC GRAVITY - 1,025 mt/m ³ .)									
ITEMS	FRAMES	COMPARTMENT	VOLUME 100% M ³ .	WEIGHT 100% TONNES	BARICENTER from			FREE SURFACE mt x m.	
					A.P. m.	B.L. m.	C.L. m.		
FPT	206 - FORE	FORE PEAK	541.89	555.44	165.00	8.37	0.00	1387	
1 PORT	181 - 206	DEEP TANK	321.76	329.80	148.39	3.89	- 1.78	150	
1 STBD.	181 - 206	DEEP TANK	321.76	329.80	148.39	3.89	1.78	150	
2 PORT	163 - 181	DEEP TANK	255.22	261.60	133.77	2.48	- 2.43	305	
2 STBD.	163 - 181	DEEP TANK	255.22	261.60	133.77	2.48	2.43	305	
2 PORT	163 - 181	WATER BALLAST TANK	451.25	462.53	133.49	8.19	- 7.07	326	
2 STBD.	163 - 181	WATER BALLAST TANK	451.25	462.53	133.49	8.19	7.07	326	
3 PORT	145 - 163	WATER BALLAST TANK	486.32	498.48	119.39	5.30	- 7.67	320	
3 STBD.	145 - 163	WATER BALLAST TANK	486.32	498.48	119.39	5.30	7.67	320	
4 PORT	127 - 145	WATER BALLAST TANK - (ANTIHEELING)	501.81	514.36	105.57	5.73	- 10.24	325	
4 STBD.	127 - 145	WATER BALLAST TANK - (ANTIHEELING)	501.81	514.36	105.57	5.73	10.24	325	
2 PORT	127 - 163	DOUBLE BOTTOM	289.53	296.77	110.71	0.89	- 3.62	1655	
2 STBD.	127 - 163	DOUBLE BOTTOM	289.53	296.77	110.71	0.89	3.62	1655	
3 PORT	91 - 127	DOUBLE BOTTOM	539.35	552.83	84.01	0.83	- 6.05	5194	
3 STBD.	91 - 127	DOUBLE BOTTOM	539.35	552.83	84.01	0.83	6.05	5194	
4 PORT	55 - 91	DOUBLE BOTTOM	646.20	662.36	55.10	1.56	- 6.27	3619	
4 STBD.	55 - 91	DOUBLE BOTTOM	646.20	662.36	55.10	1.56	6.27	3619	
APT	AFT - 14	AFTER PEAK	550.83	564.60	3.64	9.48	- 0.02	5619	

Piping and pumping arrangements

There are two designated Ballast water pumps, nr 1 and nr 2.

A separate anti-heeling system is available for list control during cargo operations. This pump transfers water internally between the anti-heeling tanks – No.4 Wing Ballast Tanks (Port and starboard).

The two General Service pumps (Fire / Bilge pumps) can also be used for ballast operations if contingencies arise.

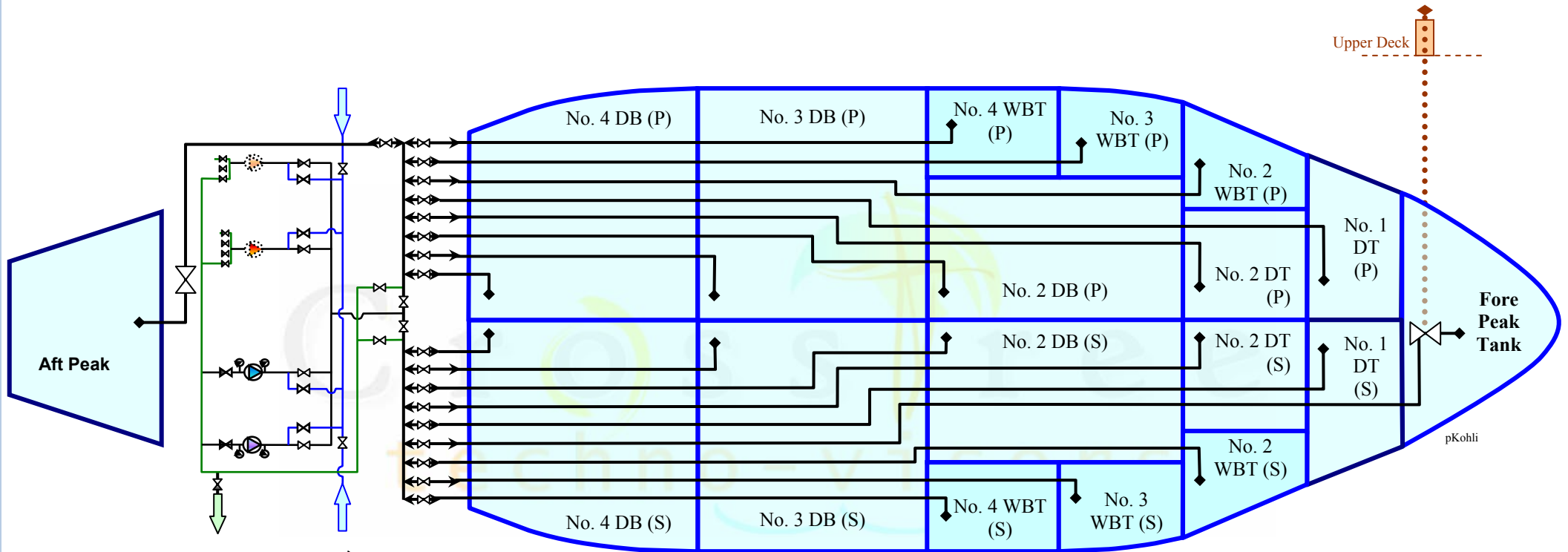
The various pump capacities are as follows-

Pump	Rated Capacity	Type
1. Ballast Pump	250 m ³ /hour	Centrifugal
2. Ballast Pump	250 m ³ /hour	Centrifugal
3. Bilge/ Fire Pump	100-150 m ³ /hour	Centrifugal
4. Fire / Bilge Pump	100-150 m ³ /hour	Centrifugal
5. Anti-heeling Pump	1500 m ³ /hour	Centrifugal

For normal operations the following table indicates pumps available for each tank.

Tank	Capacity	Pump(s) Available
Fore Peak	555.44	Ballast Pumps Nr. 1 & 2
Deep Tank 1 Port	329.80	Ballast Pumps Nr. 1 & 2
Deep Tank 1 Stbd.	329.80	Ballast Pumps Nr. 1 & 2
Deep Tank 2 Port	255.22	Ballast Pumps Nr. 1 & 2
Deep Tank 2 Stbd.	255.22	Ballast Pumps Nr. 1 & 2
Water Ballast Tank 2 Port	462.53	Ballast Pumps Nr. 1 & 2
Water Ballast Tank 2 Stbd.	462.53	Ballast Pumps Nr. 1 & 2
Water Ballast Tank 3 Port	498.48	Ballast Pumps Nr. 1 & 2
Water Ballast Tank 3 Stbd.	498.48	Ballast Pumps Nr. 1 & 2
Water Ballast Tank 4 Port Anti-heeling Tank	514.36	Ballast Pumps Nr. 1 & 2 Anti-heeling Pumps Nr. 1 & 2
Water Ballast Tank 4 Stbd Anti-heeling Tank	514.36	Ballast Pumps Nr. 1 & 2 Anti-heeling Pumps Nr. 1 & 2
Double Bottom 2 Port	296.77	Ballast Pumps Nr. 1 & 2
Double Bottom 2 Stbd.	296.77	Ballast Pumps Nr. 1 & 2
Double Bottom 3 Port	552.83	Ballast Pumps Nr. 1 & 2
Double Bottom 3 Stbd.	552.83	Ballast Pumps Nr. 1 & 2
Double Bottom 4 Port	662.36	Ballast Pumps Nr. 1 & 2
Double Bottom 4 Stbd.	662.36	Ballast Pumps Nr. 1 & 2
After Peak	564.60	Ballast Pumps Nr. 1 & 2

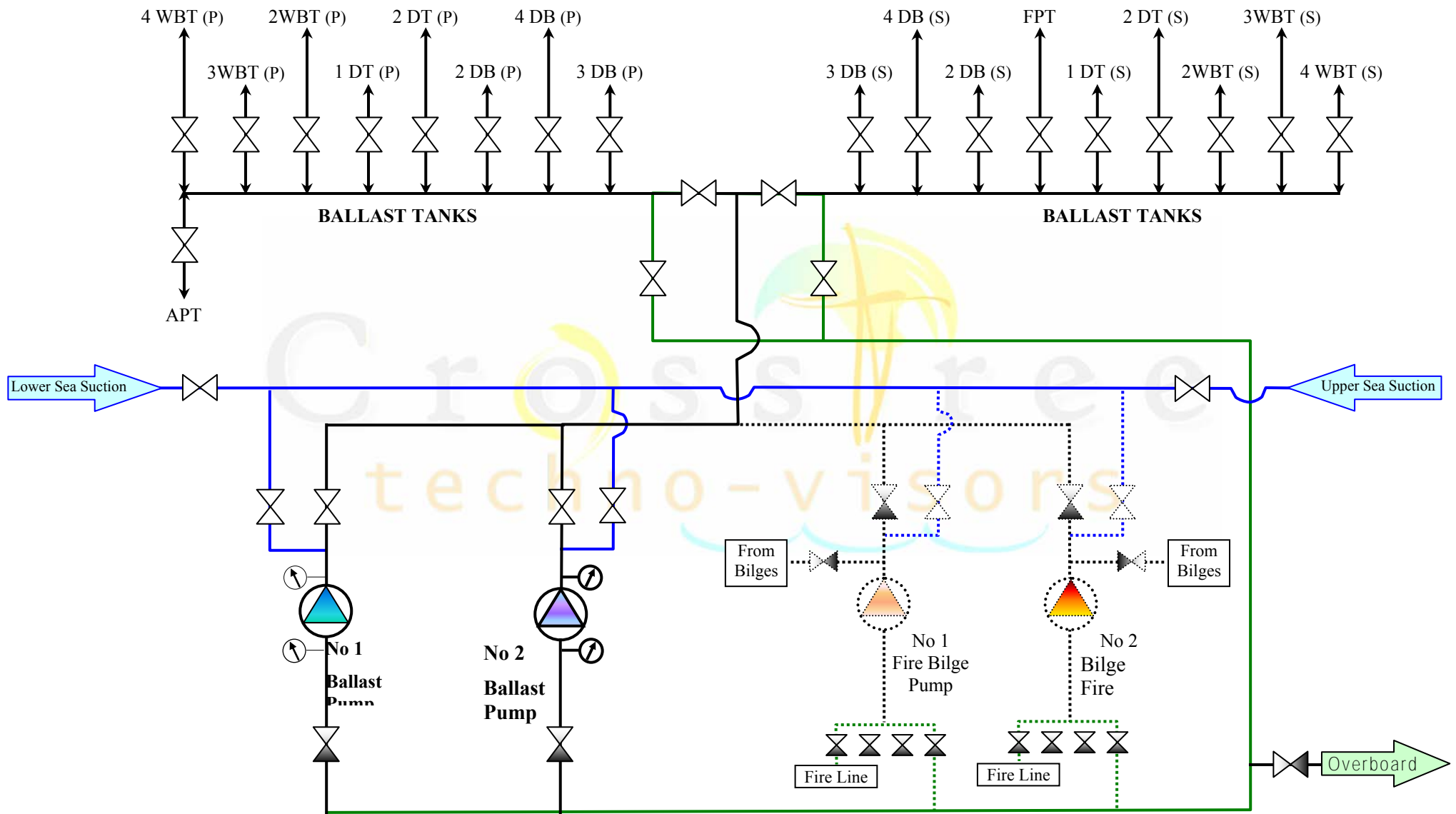
Below is a schematic diagram of the ballast pipe line system.



See Drawing for
Ballast Lines in Engine Room
(next drawing)

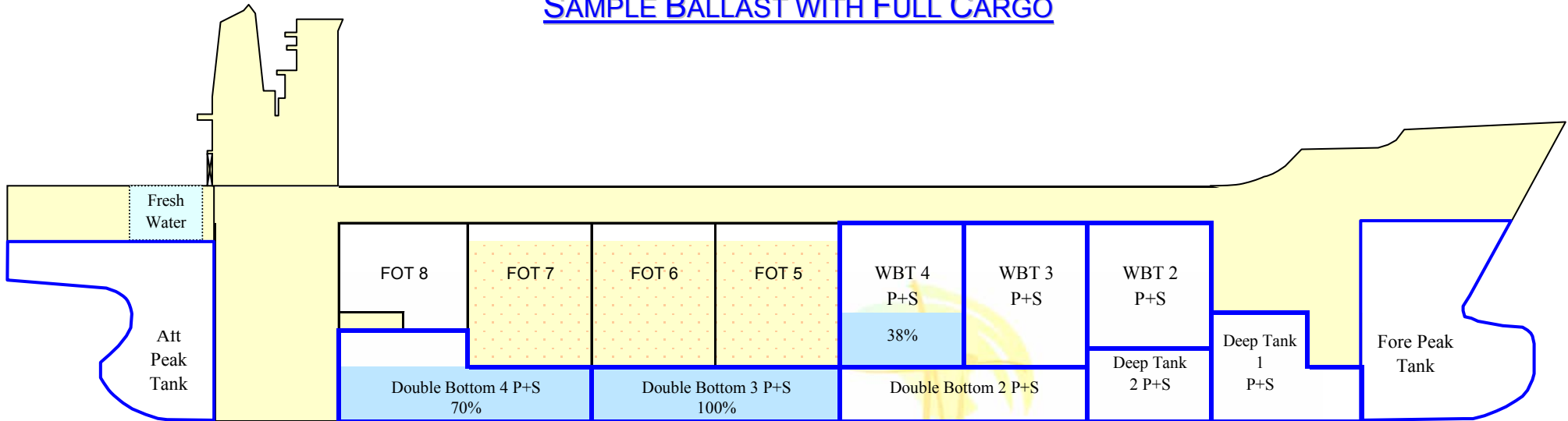
BALLAST WATER LINE DIAGRAM

BALLAST LINES IN ENGINE ROOM - SCHEMATIC



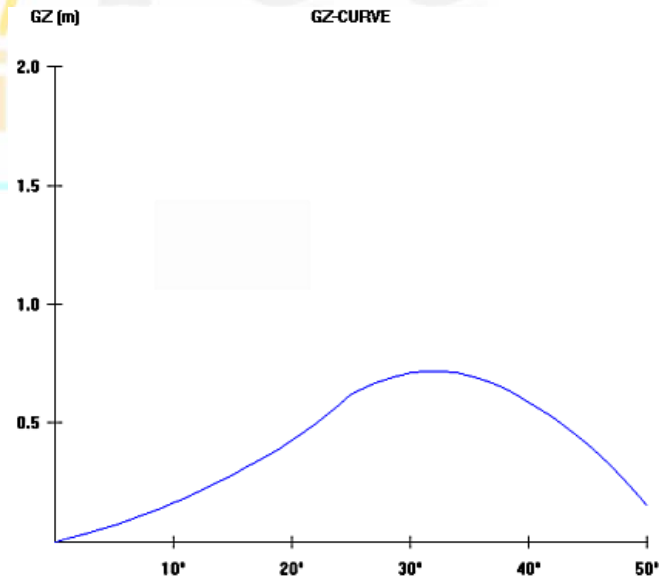
by Capt. P. Kohli

SAMPLE BALLAST WITH FULL CARGO

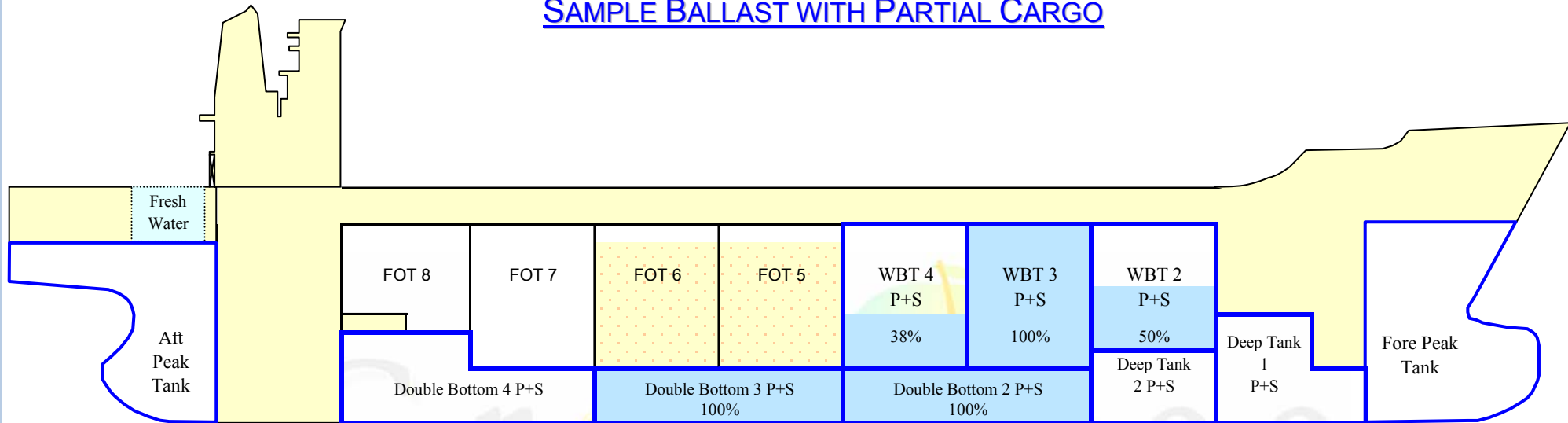


Stability Report

Cargo (540 FEUS x 22MT)	11880 MT	KMT	12.19 m
Dead Weight	16434.5 MT	KG	11.21 m
Displacement	25050 MT	FS Correction	0.05 m
Fuel Oil	1596 MT	KG Correction	11.25 m
Diesel Oil	125 MT	GM Corrected	0.93 m
Lube Oil + Misc	166 MT	GZ 0°	0.00 m
Fresh Water	235 MT	GZ 10°	0.17 m
Stores	70 MT	GZ 20°	0.45 m
Ballast	2434 MT	GZ 25°	0.64 m
Draft Forward	8.32 m	GZ 30°	0.74 m
Draft Mean	8.65 m	GZ 40°	0.62 m
Draft Aft	8.99 m	GZ 50°	0.20 m
Trim	0.67 m	Vert Moment	282579.9 tm

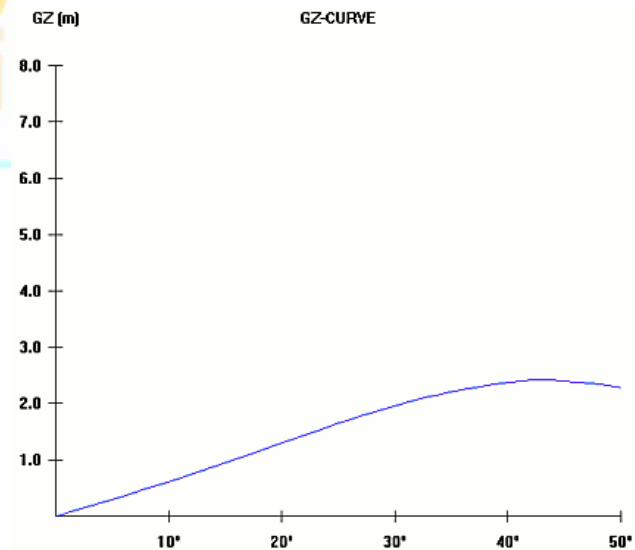


SAMPLE BALLAST WITH PARTIAL CARGO



Stability Report

Cargo (531 FEUS x 3.7MT)	1965 MT	KMT	12.89 m
Dead Weight	7116.9 MT	KG	9.37 m
Displacement	15677.9 MT	FS Correction	0.06 m
Fuel Oil	1056.6 MT	KG Correction	9.43 m
Diesel Oil	125 MT	GM Corrected	3.46 m
Lube Oil + Misc	166 MT	GZ 0°	0.00 m
Fresh Water	175 MT	GZ 10°	0.61 m
Stores	70 MT	GZ 20°	1.30 m
Ballast	3560.2 MT	GZ 25°	1.65 m
Draft Forward	5.04 m	GZ 30°	1.96 m
Draft Mean	5.96 m	GZ 40°	2.38 m
Draft Aft	6.89 m	GZ 50°	2.29 m
Trim	1.86 m	Vert Moment	147836.8 tm



Section 4 **Safety Considerations**

The IMO Resolution (reproduced in Section 10) includes guidance on safety aspects of ballast water exchange at sea. The safety points outlined below are intended to emphasise that the consequences of an inadvertent error at sea can be more significant than the same error made in port. Ballast water exchange at sea is a comparatively new development, and a sense of familiarity with the mechanics of ballasting should not be allowed to induce complacency in this new procedure.

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 has been recognised by governments and the shipping industry that individual countries' needs should be harmonised in order to ensure the safety of ships, their crews and passengers.

Conditions in which ballast water exchange at sea is not to be undertaken –

- When human life or safety of vessel is threatened.
- When subject to or expecting rough seas or weather.
 - Sea state is more than force 6.
 - Barometer is falling by more than 2 mb per hour.
 - Wind speed is more than BF 6.
- When adequate stability, stress and shear forces levels in seagoing conditions specified in the approved trim and stability booklet not can be maintained during the whole ballast water exchange operation.
 - Note: on SHIPS NAME a minimum GM requirement of 0.75m is specified by the company.
 - Stability – Keep in mind free surface created during exchange operations.
 - Shear forces, Bending Moments – Permissible seagoing strength limits should never be exceeded.
 - Draft – Minimum, maximum drafts and associated trim condition will change.
- When in freezing weather conditions.
 - as air pipes and other openings may be frozen
 - accretion of ice on deck has additional effect on vessel stability.
- When ballast exchange will impose loads beyond design forces on cargo securing arrangements, either through deformation of structure or change to ship motion. Review the cargo securing manual to ensure complete compatibility.
- Where bioluminescence (high plankton/zooplankton) visible.
- When surface confluence visible.
- When in areas known to contain potentially harmful organisms, sediment or pathogens.
- In darkness when bottom-dwelling organisms tend to rise.

- When in shallow areas or in closed areas.
- When passing over designated ocean waste dump areas
- When passing over designated fish breeding grounds.
- When insufficient time or manpower to monitor each stage of the exchange.

Safety precautions

When engaged in ballast water exchange at sea, follow procedures which account for the following, as applicable.

1. Avoidance of over and under pressurisation of ballast tanks.
 - 1.1. Check air vents are clear and free of obstructions.
 - 1.2. During operations, check that flow of air is palpable.
 - 1.3. During operations check soundings regularly and confirm that change in ballast quantity matches pumping volumetric capacity.
2. Free surface effects on stability, and sloshing loads in tanks that may be slack at any one time.
 - 2.1. Before commencing operations simulate free surface expected and confirm stability parameters are complied with.
 - 2.2. Company instructions are that SHIPS NAME (Italian Class vessels) must always maintain a GM of at least 75cm.
3. Admissible weather conditions – in areas of frequent weather changes, cyclones and in heavy icing conditions take allied precautions.
 - 3.1. Carry out calculations confirming that contingency damage stability criteria are met.
 - 3.2. In case of heavy icing conditions, do not carry out ballast water exchange unless calculations confirm that ice accretion on decks still allows sufficient stability.
4. Weather routing in areas seasonally affected by cyclones, typhoons, hurricanes or heavy icing conditions.
 - 4.1. During rough weather conditions, ballast operations will effect the righting moment of the vessel. This means that the rolling period & roll amplitude could drastically change.
 - 4.2. Increased or faster rolls (vessel stiff or tender) would subject vessel equipment and cargo to greater dynamic forces.
 - 4.3. If such changes coupled with heeling effect of strong winds endangers life, the vessel or its cargo, Do Not carry out ballast exchange operations.
5. Maintenance of adequate intact stability in accordance with the approved trim and stability booklet.
6. Permissible seagoing strength limits of shear forces and bending moments, in accordance with the approved loading manual.
 - 6.1. Confirm Shear Forces and Bending moments vessel will be subject to during ballast exchange operations.
 - 6.2. If these strength limits for seagoing conditions are likely to be exceeded, Do Not perform ballast water exchange operations.
7. Torsional forces, where relevant.

8. Draughts. – Minimum, maximum drafts and associated trim condition will change.
 - 8.1. Changes expected in vessels draft and trim should be conveyed before commencing operations to navigating bridge and the engine room.
9. Wave induced hull vibrations.
 - 9.1. Variance in hull vibrations is likely to be induced. These vibrations should be monitored as they could affect securing of Gantry cranes, Cargo and enhance engine & machinery vibrations.
10. Documented records of ballasting and/or deballasting.
 - 10.1. All ballast operations must be recorded in the ballast log (See Section 9).
 - 10.2. Any untoward change in vessels movement at sea or incident should be conveyed to the company. As these procedures are comparatively new, such reports will help in verifying the effects of these operations on vessel and it's safety.
11. Contingency procedures for situations, which may affect the ballast water exchange at sea, including deteriorating weather conditions, pump failure, loss of power, etc.
 - 11.1. **Deteriorating Weather Conditions:** If time permits complete the immediate operation and suspend the remaining ballast exchange. Minimize free surface in tanks in operations to acceptable limits.
 - 11.2. **Pump Failure:** Use standby pump – vessel has two designated ballast pumps. If both ballast pumps are in-operational, the Fire Bilge general service pumps can be brought into use after ensuring that they are correctly routed for ballast operations. Keep in mind the lower capacity of the General service pumps which will increase the time to complete ballast exchange.
 - 11.3. **Power Failure:** Stop the exchange procedure and take steps to minimize the free surface if any. Use the emergency fire pump on emergency generators to top up the tank in use (with fire hose). Alternately, for tanks double bottom tanks and deep tanks (below water line), remove the free surface by gravity fill.
12. Time to complete the ballast water exchange or an appropriate sequence thereof. Ensure sufficient manpower is available to monitor the exchange and for any contingency that may arise.
13. Monitoring and controlling the amount of ballast water.
 - 13.1. A minimum of two persons in contact with portable radios will be required to monitor the ballast exchange operators.
 - 13.2. Before starting a ballast exchange operation, verify the initial soundings.
 - 13.3. Refer to the line diagram and confirm the correct valves are opened and the tank is correctly lined up.
 - 13.4. After starting any pumping operation, confirm that the water is flowing in/out by taking a second sounding and by checking air flow at the air vents.
 - 13.5. Repeat sounding checks at regular intervals to confirm the rate of flow. This will help in timing the pump stop when required level is being reached.
 - 13.6. After stopping an operation and after closing the valves take a final sounding to confirm that the required level is reached and that there is no further change indicating a leaking valve, etc.

Section 5 **Procedures for managing ballast water**

A ballast handling plan for a ballast voyage should be prepared in advance, in a similar manner to the preparation of a cargo plan for a loaded voyage, and with the same degree of thoroughness. This pre-planning is necessary in order to maintain safety in case compliance with ballast exchange or other ballast water treatment or control options is required.

The safety information in Section 4 should be taken into account when preparing the voyage ballast plan.

This section gives guidance on ballast handling procedures to be followed at sea.

Precautionary Practices

1. Minimize Uptake in-
 - a. Areas known to contain potentially harmful organisms, sediment or pathogens.
 - b. In darkness when bottom-dwelling organisms tend to rise.
 - c. In shallow waters where propellers or strong currents may stir up sediment.
2. Routine cleaning of ballast tanks to remove sediments should be carried out when possible.
3. Avoid unnecessary discharge of Ballast water in ports. Plan ahead.
4. All movements of loading and discharging of the water ballast shall be recorded in the ballast water logbook.

Sea going condition to be calculated

- Permissible SEA going condition regarding Bending moment and Shear force to be calculated.
- Minimum draft during exchange to be stated

Sediment Removal or Reduction

*Sediment removal from tank cleaning **shall not be disposed** of directly into adjacent water while a ship is in port or in coastal waters.*

Sediment should be removed to landfill locations designated by the Port State Authorities.

Where practical, cleaning of the ballast tanks to remove sediments should be undertaken.

Flushing by using water within a tank to bring sediment into suspension will only remove a part of the mud, depending on the configuration of an individual tank and its piping arrangement.

Removing may be more appropriate on a routine basis during scheduled dry-docking.

Record of flushing and sediment removal should be kept.

The Master should take into the consideration that when removing sediment from a tank, that the oxygen inside the tank may be reduced. Therefore careful monitoring of the air inside the tank should be carried out during the whole process.

Retention of Ballast onboard (while in port)

As the Vessel is in regular service between San Diego and S.America, while in port all ballast should be retained on board – specifically in US and Peruvian waters.

- a. During cargo operation San Diego no water ballast is to be discharged into the sea.
- b. To adjust the trim of the ship and to conform to stability, strength and stress limitations water ballast is to be taken in the Port from the sea before sailing.
- c. In mid ocean ballast water is discharged to sea in accordance to method described by the Master and to maintain an adequate stability in accordance with trim, strength limits and bending moments.

When this option is used, a plan for internal ballast water control should be developed that will minimise discharge of ballast water.

Exchange at Sea

There are two methods of carrying water ballast exchange at sea. The sequential method, in which ballast tanks are pumped out and then refilled with water, and the flow-through method, in which ballast tanks are overfilled by pumping-in additional water to dilute the original water.

THE SAFETY OF THE SHIP MUST BE PARAMOUNT.

With either procedure the changes of internal and external forces on the hull will be different.

In sea conditions of greater than force 6, ballast exchange should not be carried out, because the movements of the ship will aggravate loads on the structure by causing severe sloshing. Resonance with ship motion should be avoided on all ships, if possible.

If Clean Ballast to be taken, see Safety precautions.

Other precautions must be observed when exchanging ballast water:

- Avoid over/under pressure
- Do not overflow through air vents for sustained periods
- Loss of stability due to discharged ballast weight and free surface effect to be planned for.
- Change of bending moment and shear forces to be verified and should not exceed permissible limits.

Sequential Method

The following table describes a safe sequence for the exchange of ballast water using the empty-then-refill procedure, known as the sequential method. The process requires the removal of very large weights from the ship in a dynamic situation, and then their replacement. This is a new procedure, and a sense of familiarity with the mechanics of ballasting in port should not be allowed to induce complacency.

The table indicates the status of the ballast water in every tank at the start of each step, and indicates an assumed weight of fuel and domestic drinking water [aft of the engine room bulkhead], estimated draughts, bending moments and shear forces. The action to be taken and tanks involved in each step are then specified.

It will be noted that the original condition is restored after each pair of steps. A positive decision should be made at that time, taking account of the ship's position, weather forecast, machinery performance and degree of crew fatigue, before proceeding to the next pair of steps. If any factors are considered unfavourable the ballast exchange should be suspended or halted.

Heeling effects due to asymmetrical emptying or filling have been taken into account so that all steps represent upright conditions. Actual operations must be managed so that lists do not develop during pumping.

The steps in the table meet trim and draught requirements of propeller and rudder immersion, to avoid any possibility of slamming while changing ballast, and to maintain the bridge visibility within tolerable limits.

It is as important to avoid under pressure in a tank due to emptying, as it is to avoid overpressure when filling. The consequences of bulkhead damage, or even tank collapse, at sea will be even more significant than in port.

Each step has been checked for conformity with strength and stress limitations. Checks have been made that the minimum intact stability requirements of the ship are met at every stage, and that the allowable limits for bending and twisting moments are not exceeded. Each step is therefore safe for the ship at sea in fair weather. The figure given under bending moments is the percentage of the maximum allowable at the end of each step, before commencing the next step.

Sequential Method for SHIPS NAME

The sequential method is the only exchange method to be adopted for exchange of ballast on this ship.

In the **loaded passage** (with full cargo), only Double bottom 3 (P+S) is topped up and Double bottom 4 (P+S) kept at 70% capacity. The anti-heeling tanks retain the usual average of 500 MT for internal transfer use. In this situation, the vessel is down to her draft marks, with the requisite trim and GM. No ballast exchange can take place – pumping out any ballast reduces the GM and pumping in any ballast will cause the vessel to sink below the Plimsoll mark.

This situation is acceptable as when discharging cargo, the vessel will only take on more ballast and not discharge any into the port.

ALL BALLAST IS RETAINED ON BOARD IN DISCHARGE PORT.

On the return „ballast“ trip, the vessel always returns largely with empty reefer containers. In this situation, the ballast that was taken on in the discharge port undergoes sequential exchange procedure when vessel is in deep ocean.

Namely, No 4 DBs are emptied and the remaining light load ballast undergoes exchange as listed in the following table.

For any other ballast condition, a similar table can be prepared to authenticate that due diligence was taken before carrying out the procedure, with stability, stresses and time factors having been considered. Such a table must be filed along with the ballast operations records.

A step-by-step, tank-by-tank, procedure in tabular format is appended on next page, showing the order of exchanging water ballast. The maximum number of ballast water tanks to be worked at any one time, and expected stress limits and draughts at the end of each step, are indicated. It may be necessary to produce different tables for different sea-going ballast conditions if the procedure varies.

The following codes are used in the sequential table.

F=full
S=slack
E=empty
C=changed
FO=Fuel inclusive diesel
FW=fresh water
BM=bending moments
SF=shear forces

Sequential method.

Light Cargo Condition - (491 Empty containers on return trip)

FPT	Deep Tanks		Wing Tanks				Anti-heeling		Double Bottom				APT	FO & FW	Est Drafts (m)		Trim	BM	SF	GM	Time Est
	1 P+S	2 P+S	2 P	2 S	3 P	3 S	4 P	4S	2 P+S	3 P	3S	4 P+S		MT	Fwd	Aft	m	%	%	m	hrs
E	E	E	S	S	F	F	S	S	F	F	F	E	E	1357	5.04	6.89	1.85	92	65	3.46	-
Step 1 - Pump Out DB 2 P +S																					
E	E	E	S	S	F	F	S	S	E	F	F	E	E	1357	4.77	6.97	2.2	91	65	3.36	2.32
Step 2 - Refill DB 2 P +S																					
E	E	E	S	S	F	F	S	S	C	F	F	E	E	1357	5.04	6.89	1.85	92	65	3.46	2.32
Step 3 - Pump Out DB 3 P WBT 3 S																					
E	E	E	S	S	F	E	S	S	C	E	F	E	E	1357	4.3	6.98	2.68	93	68	3.25	4.1
Step 4 - Refill DB 3 P WBT 3 S																					
E	E	E	S	S	F	C	S	S	C	C	F	E	E	1357	5.04	6.89	1.85	92	65	3.46	4.1
Step 5 - Pump Out DB 3 S WBT 3 P																					
E	E	E	S	S	E	C	S	S	C	C	E	E	E	1357	4.3	6.98	2.68	93	68	3.25	4.1
Step 6 - Refill DB 3 S WBT 3 P																					
E	E	E	S	S	C	C	S	S	C	C	C	E	E	1357	5.04	6.89	1.85	92	65	3.46	4.1
Step 7 - Pump Out WBT 2 P+S																					
E	E	E	E	E	C	C	S	S	C	C	C	E	E	1357	4.43	7.21	2.78	87	63	3.46	1.81
Step 8 - Refill WBT 2 P+S																					
E	E	E	C	C	C	C	S	S	C	C	C	E	E	1357	5.04	6.89	1.85	92	65	3.46	1.81

Total Time for Operation (hrs): 24.7

Note: The anti-heeling tanks WB 4 P+S do not require exchange as this ballast is used exclusively for internal transfer to counter list during cargo operations in port. The anti-heeling ballast pipe lines are independent of the external overboard lines. If required, these tanks can safely be exchanged also using steps 1 and 2 for these tanks. An additional 4 hrs is added to the total time.

Flow-through Method

This Method is Not Recommended on the SHIPS NAME

There are no manholes or openings from any tank on to the weather deck. Any ballast exchange using the flow through method would entail water flow through the sir vents. Given vessel age, air pipe flow rate capacity and other considerations, this method is not to be carried out.

A general discussion on the flow through method:

The flow-through method has the advantage that it can be used in weather conditions which would be marginal for use of the sequential method, since there is little change to the condition of the ship. However, the flow-through method introduces certain other risks and problems which must be considered before using this procedure. Refer also to [Section 4], "Safety Considerations".

Safety issues related to the Flow-through Method

The size of tank exit must permit a flow rate in excess of the pump capacity, in order to avoid over-pressurisation of a tank, which can lead to structural damage.

Classification Society rules specify that the diameter of air pipes from a tank is at least 125% of the diameter of the ballast water filling line.

BUT they are not designed to be used for continuous water flow.

Tank lids or other openings to be used should be specified. However, opening tank lids or manholes, though a normal practice in fine weather can compromise the integrity of main deck. The authority and the responsibility for such practice rest with the master, and prudent seamanship will ensure a procedure for confirming that they are closed after work is completed.

When Flow through method are used only centrifugal ballast pumps should be used, to avoid hydraulic pulsing shock and over pressurisation which would result from the use of direct displacement ballast pumps.

IMO's guideline on safety aspects of ballast water exchange at sea, provide additional advice and it is recommended that this be taken account of when engaged in exchange at sea using flow-through method.

The parameters used when the ship is designed always take account of storm conditions and the water on deck which results. Therefore, even at maximum pumping rates, any accumulation of water on deck will be insufficient to affect stability.

Research has established that it is necessary to pump in three times the volume of the tank to achieve a 95% change of water. For the record, pumping in only once the volume of the tank produces a 63% exchange; twice the volume produces 86% exchange, while four times the volume produces a 98% water exchange.

After each step, a positive decision should be made, taking account of the ship's position, weather forecast, machinery performance and degree of crew fatigue, before proceeding to the next step. If any factors are considered unfavourable the ballast exchange should be suspended or halted.



Section 6 Ballast water sampling points

There is unlikely to be any need for crewmembers to take samples except at the express request, and under the supervision, of a quarantine officer.

To obtain samples from tanks filled with ballast water, samples tanks should be taken through sounding pipes.

A certificate of ballast water quality from the authority in the port of departure may one day become an acceptable device to prove there is no need for extensive exchange at sea.

If the need arises, manhole access to ballast tanks can also serve as sampling points. Opening of manholes covers is manpower intensive as these are always kept bolted watertight.

Quarantine officers must be advised of all safety procedures to be observed when entering enclosed spaces.

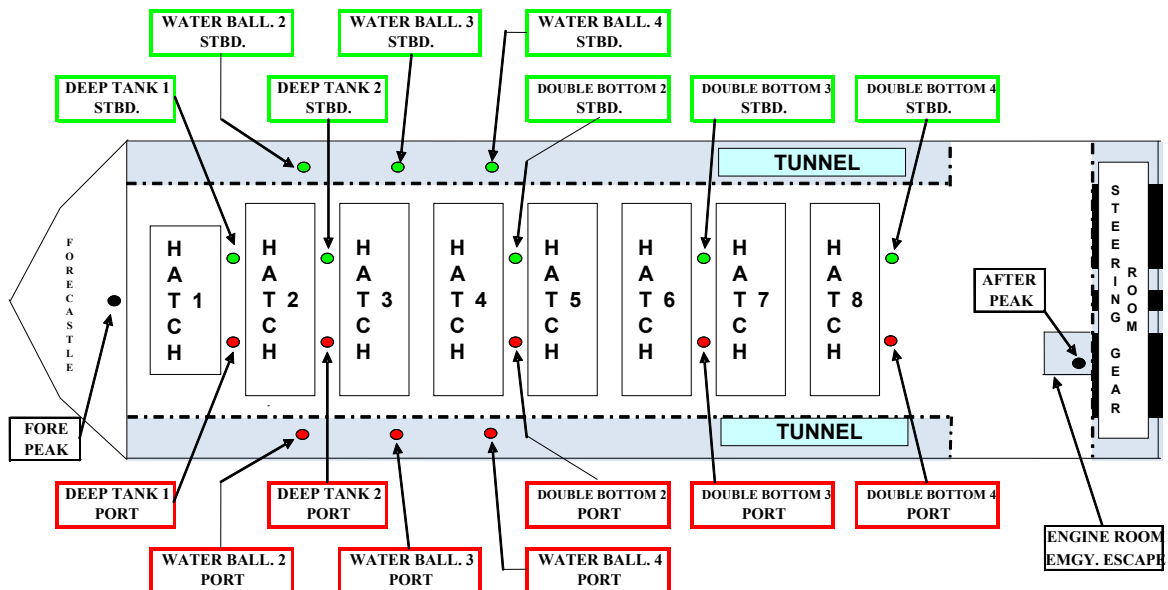
When opening manhole covers ensure that the water level is well below the opening to avoid spill over due to ship's listing motion during cargo operations in port and when at sea.

Note: No. 4 Double Bottom tanks – when tank is full, the manhole access is below tank water level. This manhole must not be opened unless tank sounding is below 1.5m.

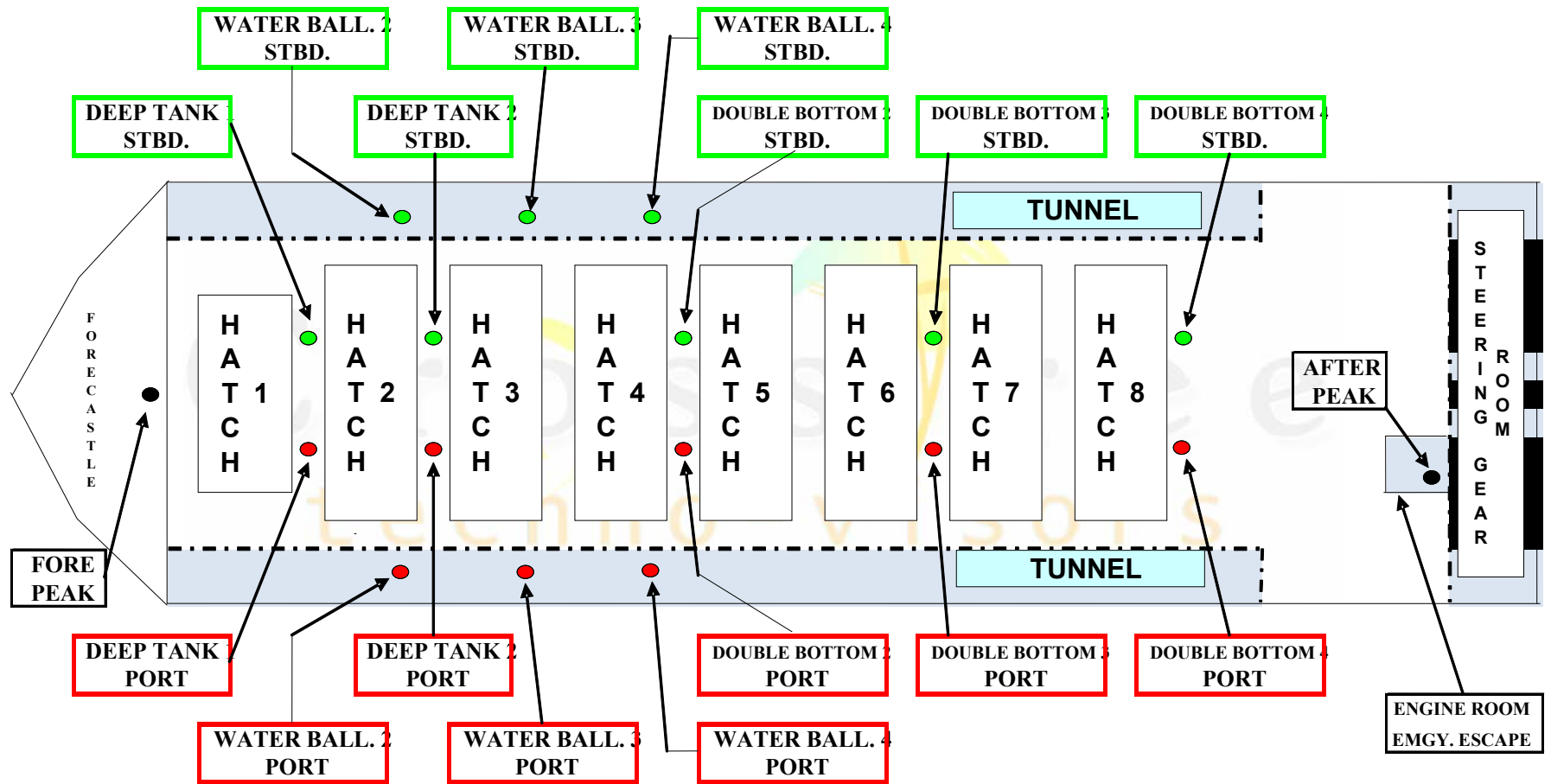
Access and sampling points arrangement to ballast tanks:

Attached are drawings of Sounding pipe and Manhole access to WBTs

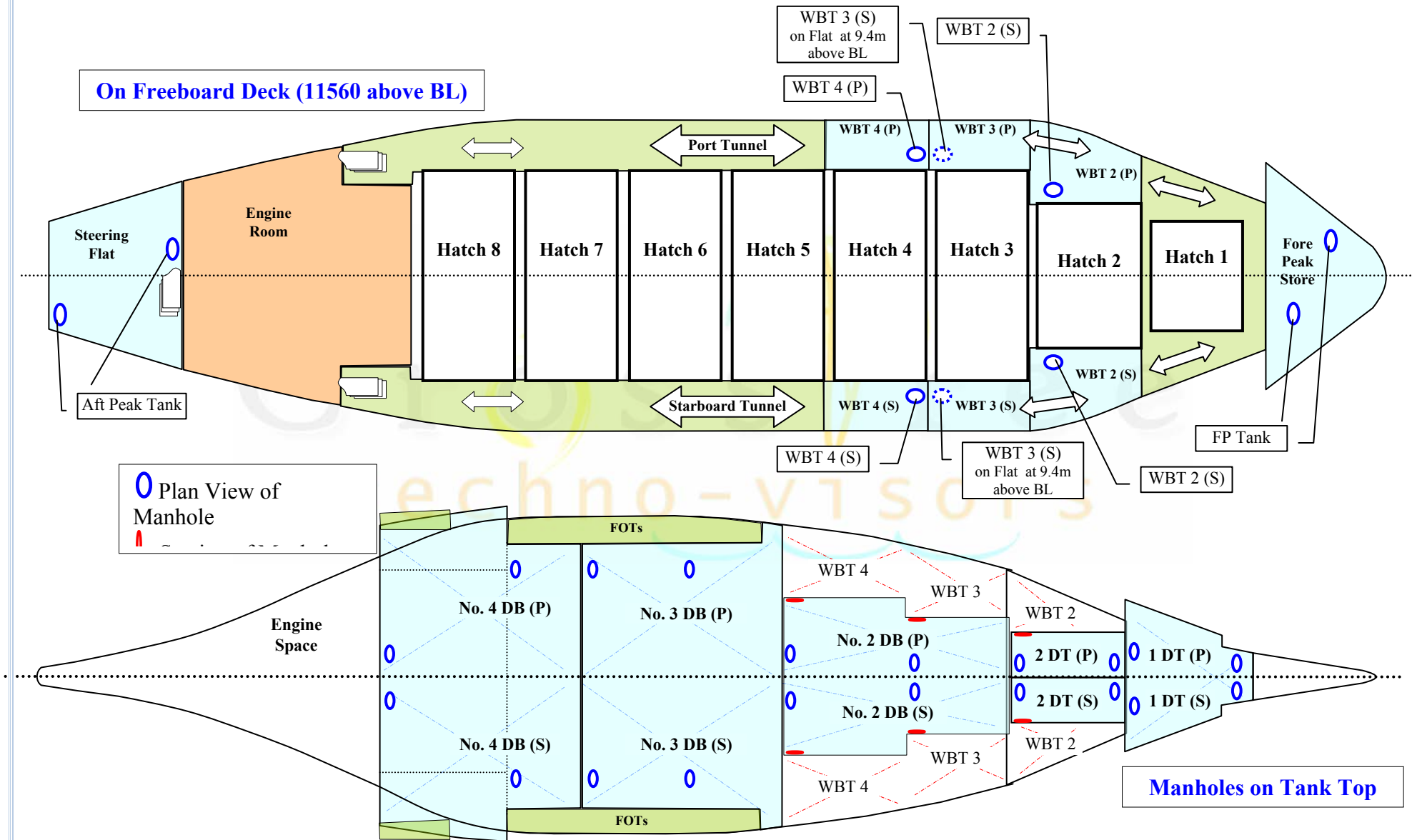
BALLAST WATER SAMPLING POINTS (SOUNDING PLAN)



BALLAST WATER SAMPLING POINTS (SOUNDING PLAN)

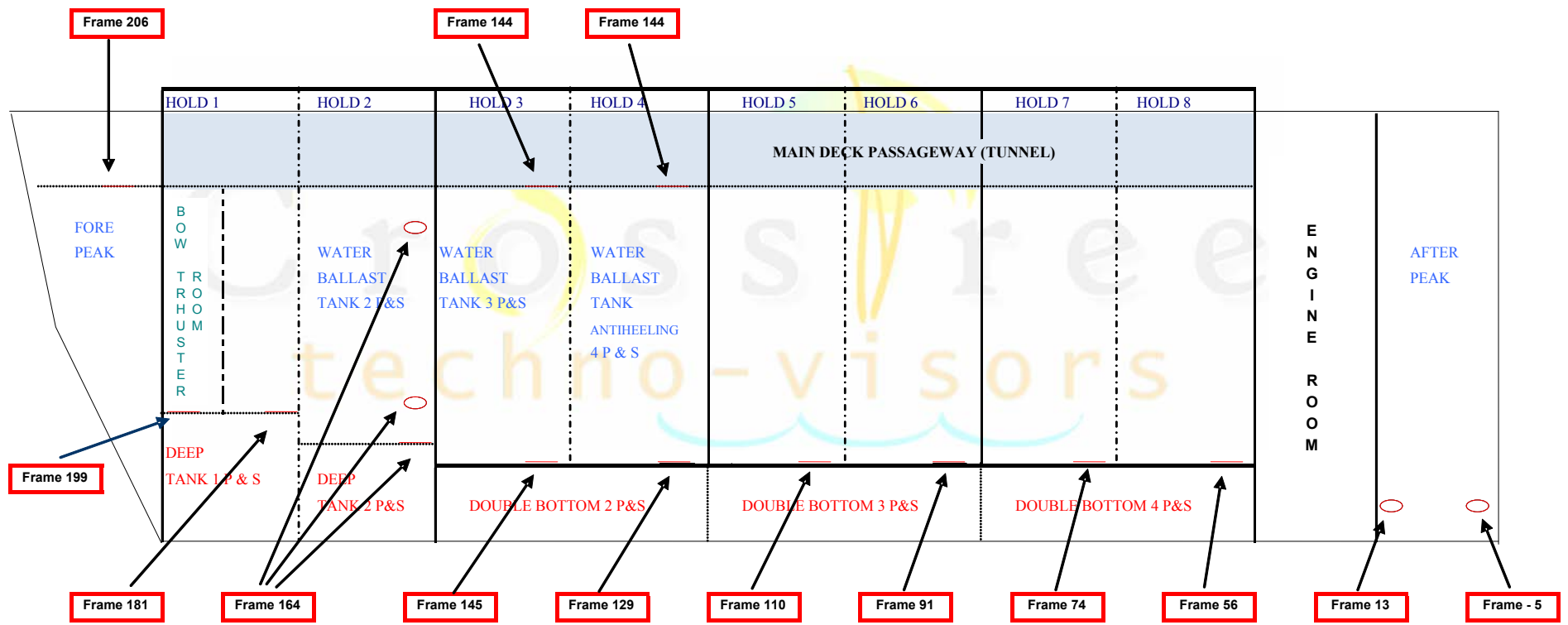


LOCATION OF BALLAST TANKS MANHOLE ACCESS



LOCATION OF BALLAST TANKS MANHOLE ACCESS

- TRANSVERSE SECTION
- PLAN VIEW



Section 7 **Crew Training and Familiarisation**

IMO Resolution A.868 (20) IMO guideline and appendix 2 should be consulted. Ship owner's stability booklet and latest weather reports are to be consulted.

- The crew must be aware of what is expected of them and why in regards to ballast water Management. If crewmembers understand the reason for the exchange or treatment of ballast water and associated sediments, they are more likely to ensure that it is carried-out effectively and efficiently. Towards this, the ballast program should be regularly discussed in operational meetings.

Ship's officers and crew engaged in ballast water exchange should be trained in and familiarises with the following:

- The reason for exchange of water ballast at sea. See Chapters - Introduction and Objective & Guidelines
- The two main methods of exchange, flow through and sequential, and the related safety considerations.
- The ships pumping plan, which includes ballast-pumping arrangement, piping and tank plan, with positions of tank suctions. Including associated air and sounding pipes. In case of using flow through method of ballast water exchange, the openings used for release of water from top of the tank together with the overboard discharge arrangement.
- The method of ensuring that the sounding pipes are clear and that air pipes and their non-return valve are in good order.
- The reason why other methods of ballast water management should NOT be used on board.
- The location of sampling point.
- The methods of sediment removal to be employed, and how frequently it should be carried-out.
- The different times required undertaking the various ballast water exchange operations.
- The method of ballast water record keeping, reporting and routine soundings.

Water treatment methods are being investigated, including heat treatment, exposure to ultra violet lights, filtering and chemical treatment, none as yet seems to be practical or cost effective for general use by cargo ships.

Section 8 **Duties of appointed ballast water management officer**

Appointed Ballast Water Management Officer [Master's 1st Mate – the Chief Officer]

Duties of the appointed officer in charge of ballast water management

1. Prepare ballast-handling plan for the voyage in advance. (*To be handled in the same manner as the passage plan*)
2. Ensure that the ballast water treatment or exchange follows procedures in the ballast water management plan.
3. Inform the owner or operator by an agreed procedure when commencing ballast water exchange and when it is completed.
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 handling log.
7. Prepare and submit the pre-arrival Ballast Report to authorities as and when required.
8. To observe the Planned Maintenance Routine system – inspect ballast tanks and carry out sediment removal as and when required.

Section 9 **Ballast water reporting form and handling log**

1. Format for ballast water reporting form

Guidelines for completing the ballast water reporting form

This form is an example developed in IMO, to serve as a guide for use when reporting to a national authority that requests information in advance. To avoid misunderstandings, some guidance for completing it follow on the page opposite. It should be noted that question 3, “Total number of tanks on board” refers only to the total number of segregated ballast tanks. Care should be taken before using this general form, that the country being approached does not have its own form for use when reporting.

It maybe found convenient to pre-format all reporting forms to contain permanent information such as ship’s name, IMO number, total numbers of tanks onboard, total ballast capacity etc.

This will help to avoid inadvertent errors, and the clarity of presentation will be welcome to quarantine officers.

2. Format for ballast water handling log

Record of loading and discharging ballast

Narrative pages for recording unusual events

These two forms have been created as a guide for recording the sort of information often requested by quarantine officers who wish to learn about the source of the ballast water on board.

Even if a ship is not currently trading in an area where ballast water information is required to be reported, it may later prove worthwhile to have a history of what water has been carried.

GUIDELINES FOR COMPLETING THE BALLAST WATER REPORTING FORM

SECTION 1: SHIP INFORMATION

Ship's Name: Print the name of the ship. **Owner:** The registered owners or operators of the ship.
Flag: Country of the port of registry.
Last Port and Country: Last port and country at which the ship called before arrival in the current port - no abbreviations, please.
Next Port and Country: Next port and country at which the ship will call, upon departure from the current port - no abbreviations, please.
Type: List specific ship type, write out or use the following abbreviations:
bulk(bc); ro-ro (rr); container (cs); tanker(ts); passenger (pa); oil/bulk ore (ob); general cargo (gc). Write out any additional ship types.
GT: Gross tonnage. **Arrival Date:** Arrival date at current port. Please use the European date format (DDMMYY)
IMO Number: Identification Number of the ship used by the International Maritime Organization.
Call Sign: Official call sign.
Agent: Agent used for this voyage.
Arrival Port: This is the current port. No abbreviations, please.

SECTION 2: BALLAST WATER

(Note: Segregated ballast water = clean, non-oily ballast)

Total ballast water on board: Total segregated ballast water upon arrival at current port - with units.
Total ballast water capacity: Total volume of all ballastable tanks or holds - with units.

SECTION 3: BALLAST WATER TANKS

Count all tanks and holds separately (e.g. port and starboard tanks should be counted separately)

Total No. of Tanks on board: Count all tanks and holds that can carry segregated ballast water.
Ballast Water Management Plan on board?: Do you have a ballast water management plan, specific to your ship, onboard?
Circle Yes or No.
Management Plan Implemented?: Do you follow the above plan? Circle Yes or No.
No. of Tanks in Ballast: Number of segregated ballast water tanks and holds with ballast at the start of the voyage to the current port. If you have no ballast water on board, go to section 5.
No. of Tanks Exchanged: This refers only to tanks and holds with ballast at the start of the voyage to the current port.
No. of Tanks Not Exchanged: This refers only to tanks and holds with ballast at the start of the voyage to the current port.

SECTION 4: BALLAST WATER HISTORY

BW Source: Please list all tanks and holds that you have discharged or plan to discharge in this port. Carefully write out, or use codes listed below the table. Follow each tank across the page, listing all source(s), exchange events, and/or discharge events separately. If the ballast water history is identical (i.e. the same source, exchange and discharge dates and locations), sets of tanks can be combined (example: wing tank 1 with wing tank 2, both water from Belgium, exchanged 02.11.97, mid ocean). Please use an additional page if you need, being careful to include the arrival date, ship's name and IMO number at the top.

Date: Date of ballast water uptake. Use European format (DDMMYY).

Port or Latitude/Longitude: Location of ballast water uptake.

Volume: Volume of ballast water uptake, with units.

Temperature: Water temperature at time of ballast water uptake, in degrees centigrade (Celsius).

BW Exchange: Indicate Exchange Method: Circle empty/refill or flow through.

Date: Date of ballast water exchange. Use European format (DDMMYY).

Endpoint or Latitude/Longitude: Location of ballast water exchange. If it occurred over an extended distance, list the end point latitude and longitude.

Volume: Volume of ballast water exchanged, with units.

Percentage exchanged: Percentage of ballast water exchanged. Calculate this by dividing the number of units of water exchanged by the original volume of ballast water in the tank. If necessary, estimate this based on pump rate. (Note: For effective flow-through exchange this value should be at least 300%).

Sea Height (m): Record the sea height in metres at the time of the ballast exchange (Note: this is the combined height of the wind seas and swell, measured from crest to trough. It does not refer to the depth).

BW Discharge:

Date: Date of ballast water discharge. Use European format (DDMMYY).

Port or Latitude/Longitude: Location of ballast water discharge, no abbreviations for ports.

Volume: Volume of ballast water discharged, with units.

Salinity: Record salinity of ballast water at the time of discharge, with units, (i.e. specific gravity (sg) or parts per thousand (ppt)).

If exchanges were not conducted, state other control action(s) taken: If exchanges were not made on all tanks and holds to be discharged, what other actions were taken? E.g. transfer of water to a landbased holding facility, or other approved treatment.

If none, state reasons why not: List specific reasons why ballast exchange was not done. This applies to all tanks and holds being discharged.

SECTION 5:

IMO Ballast Water Guidelines On Board?: Do you have IMO Resolution A.868(20) on board your ship? Circle Yes or No.

Responsible Officer's name and title (Printed) and signature: e.g. the First Mate, Captain, or Chief Engineer must print his name and title and sign the form.

Section 10 **Guidelines from IMO Resolution A.868 (20), and appendices**

GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER TO MINIMIZE THE TRANSFER OF HARMFUL AQUATIC ORGANISMS AND PATHOGENS

THE ASSEMBLY, RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning prevention and control of marine pollution from ships,

RECALLING ALSO resolution A.774(18) by which it recognized that the uncontrolled discharge of ballast water and sediment from ships has led to the transfer of harmful aquatic organisms and pathogens, causing injury to public health and damage to property and the environment, and accordingly adopted Guidelines for Preventing the Introduction of Unwanted Aquatic Organisms and Pathogens from Ships' Ballast Water and Sediment Discharges, and further that the Marine Environment Protection Committee (MEPC) and the Maritime Safety Committee (MSC) shall keep the ballast water issue and the application of the Guidelines under review with a view to further developing the Guidelines as a basis for a new Annex to MARPOL 73/78,

RECALLING FURTHER that the 1992 United Nations Conference on Environment and Development (UNCED), in its Agenda 21 requests IMO to consider the adoption of appropriate rules on ballast water discharge to prevent the spread of non-indigenous organisms, and further proclaims in its Declaration on Environment and Development that States shall widely apply the precautionary approach according to their capabilities,

BEARING IN MIND that MEPC/Circ.288 recognized that the existing Guidelines do not provide a complete solution towards the total prevention of the introduction of harmful aquatic organisms and pathogens, but urged that focus should be directed on measures aimed at minimizing the risks, emphasizing further that in applying the existing Guidelines, the ship's safety was of paramount importance,

NOTING the objectives of the Convention on Biological Diversity, 1992, and that the transfer and introduction of alien aquatic species with ballast water threatens the conservation and sustainable use of biological diversity,

NOTING FURTHER the status of work carried out by MEPC as requested by resolution A.774(18) concerning the development of legally binding provisions on ballast water management together with guidelines for their effective implementation, as well as the Guidance on Safety Aspects of Ballast Water Exchange at Sea prepared by the Sub-Committee on Ship Design and Equipment, and distributed as MEPC/Circ.329 and MSC/Circ.806, both of 30 June 1997,

RECOGNIZING that several States have taken unilateral action by adopting legally binding provisions for local, regional or national application with a view to minimizing the risks of introducing harmful aquatic organisms and pathogens through ships entering their ports, and also that this issue, being of worldwide concern, demands action based on globally applicable regulation together with guidelines for their effective implementation and uniform interpretation,

HAVING CONSIDERED the recommendation of the MEPC at its fortieth session on this issue,

1. ADOPTS the Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens set out in the Annex to the present resolution;
2. REQUESTS Governments to take urgent action in applying these Guidelines, including the dissemination thereof to the shipping industry, to use them as a basis for any measures they adopt with a view to minimizing the risks of introducing harmful aquatic organisms and pathogens, and to report to the MEPC on any experience gained in their implementation;
3. REQUESTS ALSO the MEPC to work towards completion of legally binding provisions on ballast water management in the form of a new Annex to MARPOL 73/78, together with guidelines for their uniform and effective implementation with a view to their consideration and adoption in the year 2000;
4. REQUESTS FURTHER the MSC to include in its workplan the evaluation of information received from interested parties, particularly that relevant to 12.2 of the Guidelines adopted herewith, with a view to determining the hazards and potential consequences for various existing ship types and operations. The MSC is also requested to consider any other relevant issues concerning ballast water management as well as design objectives for new ships, with a view to minimizing to the extent possible risks of introducing harmful aquatic organisms and pathogens with ships' ballast water and sediments;
5. REVOKES resolution A.774(18).

ANNEX (to IMO Assembly Resolution)

**GUIDELINES FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER TO
MINIMIZE THE TRANSFER OF HARMFUL AQUATIC ORGANISMS AND PATHOGENS**

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1 Introduction

1.1 Studies carried out in several countries have shown that many species of bacteria, plants, and animals can survive in a viable form in the ballast water and sediment carried in ships, even after journeys of several months' duration. Subsequent discharge of ballast water or sediment into the waters of port States may result in the establishment of harmful aquatic organisms and pathogens which may pose threats to indigenous human, animal and plant life, and the marine environment. Although other media have been identified as being responsible for transferring organisms between geographically separated water bodies, ballast water discharge from ships appears to have been among the most prominent.

1.2 The potential for ballast water discharge to cause harm has been recognised not only by the International Maritime Organization 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.

1.3 These Guidelines are not to be regarded as a certain solution to the problem. Rather, each part of them should be viewed as a tool which, if correctly applied, will help to minimize the risks associated with ballast water discharge. As scientific and technological advances are made, the Guidelines will be refined to enable the risk to be more adequately addressed. In the interim, port States, flag States and other parties that can assist in mitigating this problem should exercise due care and diligence in an effort to conform to the maximum extent possible with the Guidelines.

1.4 The selection of appropriate methods of risk minimization will depend upon several factors, including the type or types of organisms being targeted, the level of risk involved, its environmental acceptability, the economic and ecological costs involved and the safety of ships.

2 Definitions

For the purposes of these Guidelines, the following definitions apply:

Administration means the Government of the State under whose authority the ship is operating.

Convention means MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships, 1973, and the Protocol of 1978 related thereto).

Member States means States that are Members of the International Maritime Organization.

Organization means the International Maritime Organization (IMO).

Port State authority means any official or organisation authorized by the Government of a port State to administer guidelines or enforce standards and regulations relevant to the implementation of national and international shipping control measures.

Treatment means a process or mechanical, physical, chemical or biological method to kill, remove or render infertile, harmful or potentially harmful organisms within ballast water.

3 Application

The Guidelines are directed to Member States and can apply to all ships; however, a port State authority shall determine the extent to which they do apply.

4 Guideline objectives and background

4.1 The objectives of these Guidelines, developed under technical and scientific guidance, are intended to assist Governments and appropriate authorities, ship masters, operators and owners, and port authorities, as well as other interested parties, in minimizing the risk of introducing harmful aquatic organisms and pathogens from ships' ballast water and associated sediments while protecting ships' safety.

4.2 The Guidelines allow port States to exempt ships within the area under their jurisdiction from part or all of the relevant provisions. Notwithstanding, any administration wishing to apply restrictions to ballast water operations should still follow these Guidelines, when developing legislation or procedures.

4.3 In order that the Guidelines may be implemented in a standard and uniform manner, all Member State Governments, ship operators, other appropriate authorities and interested parties are requested to apply these Guidelines.

5 Dissemination of information

5.1 Administrations are encouraged to maintain and exchange information relevant to these Guidelines through the Organization. Accordingly, administrations are encouraged to provide the Organization with the following:

- .1 Information on severe outbreaks or infestations of harmful aquatic organisms which may pose a risk;
- .2 Copies of current domestic laws and regulations;
- .3 Technical and research information;
- .4 Education materials (such as audio and video tapes) and printed materials; and

- .5 Location and terms of use of alternative exchange zones, contingency strategies, availability of shore reception facilities, fees, etc.
- 5.2 Member States, applying ballast water and sediment discharge procedures, should notify the Organization of specific requirements and provide to the Organization, for the information of other Member States and non-governmental organizations, copies of any regulations, standards, exemptions or guidelines being applied. Verification and detailed information concerning port State requirements should be obtained by the ship prior to arrival.
- 5.3 Port State authorities should provide the widest possible distribution of information on ballast water and sediment management and treatment requirements that are being applied to shipping. Failure to do so may lead to unnecessary delays for ships seeking entry to port States.
- 5.4 Shipping organizations and ships' managers should be familiar with the requirements of port State authorities with respect to ballast water and sediment management and treatment procedures, including information that will be needed to obtain entry clearance.
- 5.5 Member States are invited to provide the Organization with details of any research and development studies that they carry out with respect to the impact and control of harmful aquatic organisms and pathogens in ships' ballast water and sediment.
- 5.6 Member States should provide to the Organization details of records describing reasons why existing requirements could not be complied with, e.g. force majeure, heavy weather, failure of equipment, or lack of information concerning port State requirements.

6 Training and education

- 6.1 Training for ships' masters and crews as appropriate should include instructions on the application of ballast water and sediment management and treatment procedures, based upon the information contained in these Guidelines. Instruction should also be provided on the maintenance of appropriate records and logs. Governments should ensure that their marine training organizations include this in the contents of their syllabus.
- 6.2 The application of processes and procedures concerning ballast water management are currently at the core of the solution to minimize the introduction of harmful aquatic organisms and pathogens.
- 6.3 Governments are encouraged to include knowledge of duties regarding the control of pollution of the sea by harmful aquatic organisms and pathogens in their training requirements for certificates.

7 Procedures for ships and port States

7.1 Procedures for ships

- 7.1.1 Every ship that carries ballast water should be provided with a ballast water management plan to assist in the minimization of transfer of harmful aquatic organisms and pathogens. The intent of the plan should be to provide safe and effective procedures for ballast water management.
- 7.1.2 The ballast water management plan should be specific to each ship.
- 7.1.3 The ballast water management plan should be included in the ship's operational documentation. Such a plan should address, *inter alia*:

- relevant parts of these Guidelines;
- approval documentation relevant to treatment equipment;
- an indication of records required; and
- the location of possible sampling points.

7.2 Procedures for port States

- 7.2.1 Reception and treatment facilities should be made available for the environmentally safe disposal of ballast tank sediments.
- 7.2.2 Discharge of ship's ballast water into port reception and/or treatment facilities may provide an acceptable means of control. Port State authorities wishing to utilize this strategy should ensure that the facilities are adequate.

8 Recording and reporting procedures

8.1 Procedures for ships

- 8.1.1 Where a port State authority requires that specific ballast water procedures and/or treatment option(s) be undertaken, and due to weather, sea conditions or operational impracticability such action cannot be taken, the master should report this fact to the port State authority as soon as possible and, where appropriate, prior to entering seas under its jurisdiction.
- 8.1.2 To facilitate the administration of ballast water management and treatment procedures on board each ship, a responsible officer should be appointed to maintain appropriate records and to ensure that ballast water management and/or treatment procedures are followed and recorded.

8.1.3 When taking on or discharging ballast water, as a minimum, the dates, geographical locations, ship's tank(s) and cargo holds, ballast water temperature and salinity as well as the amount of ballast water loaded or discharged should be recorded. A suitable format is shown in appendix 1. The record should be made available to the port State authority.

8.1.4 The location and suitable access points for sampling ballast or sediment should be described in the ship's ballast water management plan. This will allow crew members to provide maximum assistance when officers of the port State authority require a sample of the ballast water or sediment.

8.2 Procedures for port States

8.2.1 Consistent with 5.2 above, port States should provide ships with the following information:

- details of their requirements concerning ballast water management;
- location and terms of use of alternative exchange zones;
- any other port contingency arrangements; and
- the availability, location, capacities of and applicable fees relevant to reception facilities that are being provided for the environmentally safe disposal of ballast water and associated sediment.

8.2.2 To assist ships in applying the precautionary practices described in 9.1.1 below, port States should inform local agents and/or the ship of areas and situations where the uptake of ballast water should be minimized, such as:

- areas with outbreaks, infestations or known populations of harmful organisms and pathogens;
- areas with current phytoplankton blooms (algal blooms, such as red tides);
- nearby sewage outfalls;
- nearby dredging operations;
- when a tidal stream is known to be the more turbid; and
- areas where tidal flushing is known to be poor.

9 Ships' operational procedures

9.1 Precautionary practices

9.1.1 Minimizing 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 minimized or, where practicable, avoided in areas and situations such as:

- areas identified by the port State in connection with advice relating to 8.2.2 above;
- in darkness when bottom-dwelling organisms may rise up in the water column;
- in very shallow water; or
- where propellers may stir up sediment.

9.1.2 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.

9.1.3 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.

9.2 Ballast water management options

9.2.1 Ballast water exchange

Near-coastal (including port and estuarine) organisms released in mid-ocean, and oceanic organisms released in coastal waters, do not generally survive.

When exchanging ballast at sea, guidance on safety aspects of ballast water exchange as set out in appendix 2 should be taken into account. Furthermore, the following practices are recommended:

- where practicable, ships should conduct ballast exchange in deep water, in open ocean and as far as possible from shore. Where this is not possible, requirements developed within regional agreements may be in operation, particularly in areas within 200_nautical miles from shore. Consistent with 9.1.2 above, all of the ballast water should be discharged until suction is lost, and stripping pumps or eductors should be used if possible;

- where the flow-through method is employed in open ocean by pumping ballast water into the tank or hold and allowing the water to overflow, at least three times the tank volume should be pumped through the tank;
- where neither form of open ocean exchange is practicable, ballast exchange may be accepted by the port State in designated areas; and
- other ballast exchange options approved by the port State.

9.2.2 Non-release or minimal release of ballast water

In cases where ballast exchange or other treatment options are not possible, ballast water may be retained in tanks or holds. Should this not be possible, the ship should only discharge the minimum essential amount of ballast water in accordance with port States' contingency strategies.

9.2.3 Discharge to reception facilities

If reception facilities for ballast water and/or sediments are provided by a port State, they should, where appropriate, be utilized.

9.2.4 Emergent and new technologies and treatments

9.2.4.1 If suitable new and emergent treatments and technologies prove viable, these may substitute for, or be used in conjunction with, current options. Such treatments could include thermal methods, filtration, disinfection including ultraviolet light, and other such means acceptable to the port State.

9.2.4.2 Results concerning the application and effectiveness of new ballast water management technologies and associated control equipment should be notified to the Organization with a view to evaluation and incorporation, as appropriate, into these Guidelines.

10 Port State considerations

The following is provided for the guidance of port State authorities in the implementation of their ballast water management programme, and to assess risks in relation to the ballast water containing harmful aquatic organisms and pathogens.

10.1 Highly disparate conditions between uptake and discharge ports

Significantly different conditions may exist between port(s) of origin and the port in which ballast water is discharged. Examples include freshwater ballast being released into highly saline ports. There may be organisms capable of surviving such extreme transfers; however, there is a lower probability of species establishment under such transport events.

10.2 Ballast water age

The length of time during which ballast water is within an enclosed ballast tank may also be a factor in determining the number of surviving organisms, because of the absence of light, decreasing nutrients and oxygen, changes of salinity and other factors. However, the maximum length of survival of organisms in ballast water varies, and in many cases is not known. Water of an age of 100 days should be considered the minimum for applying this consideration. Ballast water and sediments may contain dinoflagellate cysts and other organisms capable of surviving for a much longer length of time.

10.3 Presence of target organisms

10.3.1 Under certain circumstances it may be possible to determine if one or more target species are present in the water of a specific port and have been ballasted in a ship. In these circumstances, the receiving port State authority may invoke management measures accordingly. Even if such target species are not present, however, it should be noted that the ship may still be carrying many untargetted species which, if released in new waters, could be potentially harmful.

10.3.2 Port States are encouraged to carry out biological baseline surveys in their ports and to disseminate the results of their investigations.

11 Enforcement and monitoring by port states

11.1 Consistent with the precautionary approach to environmental protection, these Guidelines can apply to all ships unless specifically exempted by a port State authority within its jurisdiction. In accordance with 5.2 above, port State authorities should inform the Organization on how the Guidelines are being applied.

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

11.3 In all cases, a 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.

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

- 11.5 Any instructions or requirements of a ship should be provided in a timely manner and be clear and concise.
- 11.6 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.
- 11.7 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.
- 11.8 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.
- 11.9 Where ballast water or sediment sampling for compliance or effectiveness monitoring is being undertaken, port State authorities should minimize delays to ships when taking such samples.
- 11.10 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.
- 11.11 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.
- 11.12 Sampling methods for research and monitoring is the responsibility of the individual port State. The Organization welcomes information on new or innovative methods of sampling and/or analysis, and any relevant information should be provided to it.
- 11.13 Port State authorities should indicate to the master or responsible officer the purpose for which a sample is taken (i.e., monitoring, research or enforcement). Results of analyses of samples should be made available to ship's operators on request.
- 11.14 Port State authorities may sample or require samples to analyse ballast water and sediment, before permitting a ship to proceed to discharge its ballast water in environmentally sensitive locations. 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.

12 Future considerations in relation to ballast water exchange

12.1 Research needs

Operational measures such as ballast water exchange may be appropriate in the short term; however, there is a clear need for further research. These Guidelines should be revised and adjusted in the light of results concerning new ballast water management options.

12.2 Long-term evaluation of safety aspects in relation to ballast water exchange

Recognizing the need to evaluate the hazards and potential consequences for various types of ships and operations, interested parties should carry out detailed studies and provide information relevant to:

- experience gained from carrying out ballast water exchange at sea, including any samples/model procedures;
- operational precautions and procedures implemented to avoid potential hazards and consequences that may arise during the ballast water exchange at sea;
- an evaluation of the safety margins between the actual metacentric height and stresses versus the allowable seagoing limits specified in the approved trim and stability booklet and loading manual, relevant to different types of ships and loading conditions;
- any hazards which may arise due to human element issues relative to the responsible execution of ballast water exchange at sea in a manner which may not be fully prudent;
- operational procedures carried out prior to initiating the ballast water exchange at sea and check points during the exchange;
- the extent of training and management necessary to ensure that the process of ballast water exchange at sea is effectively monitored and controlled on board;
- plan of action to incorporate any unique procedures should an emergency occur which may affect the exchange of ballast water at sea; and
- the decision-making process, taking into account relevant safety matters, including ship's position, weather conditions, machinery performance, ballast system inspection and maintenance, crew safety and availability.

13 Ballast system design

Builders, owners and classification societies should take these Guidelines into consideration when designing new ships or modifying existing ships.

GUIDANCE ON SAFETY ASPECTS OF BALLAST WATER EXCHANGE AT SEA

1 Introduction

1.1 This document is intended to provide guidance on the safety aspects of ballast water exchange at sea. The different types of ships which may be required to undertake ballast water exchange at sea make it presently impractical to provide specific guidelines for each ship type. Shipowners are cautioned that they should consider the many variables that apply to their ships. Some of these variables include type and size of ship, ballast tank configurations and associated pumping systems, trading routes and associated weather conditions, port State requirements and manning.

1.2 Ballast water exchange at sea procedures contained in relevant management plans should be individually assessed for their effectiveness from the environmental protection point of view as well as from the point of view of their acceptability in terms of structural strength and stability.

1.3 In the absence of a more scientifically based means of control, exchange of ballast water in deep ocean areas or open seas currently offers a means of limiting the probability that fresh water or coastal aquatic species will be transferred in ballast water. Two methods of carrying out ballast water exchange at sea have been identified:

- .1 the sequential method, in which ballast tanks are pumped out and refilled with clean water; and/or
- .2 the flow-through method, in which ballast tanks are simultaneously filled and discharged by pumping in clean water.

2 Safety precautions

2.1 Ships engaged in ballast water exchange at sea should be provided with procedures which account for the following, as applicable:

- .1 avoidance of over and under-pressurization of ballast tanks;
- .2 free surface effects on stability and sloshing loads in tanks that may be slack at any one time;
- .3 admissible weather conditions;
- .4 weather routing in areas seasonably affected by cyclones, typhoons, hurricanes, or heavy icing conditions;
- .5 maintenance of adequate intact stability in accordance with an approved trim and stability booklet;
- .6 permissible seagoing strength limits of shear forces and bending moments in accordance with an approved loading manual;
- .7 torsional forces, where relevant;
- .8 minimum/maximum forward and aft draughts;
- .9 wave-induced hull vibration;
- .10 documented records of ballasting and/or de-ballasting;
- .11 contingency procedures for situations which may affect the ballast water exchange at sea, including deteriorating weather conditions, pump failure, loss of power, etc.;
- .12 time to complete the ballast water exchange or an appropriate sequence thereof, taking into account that the ballast water may represent 50 % of the total cargo capacity for some ships; and
- .13 monitoring and controlling the amount of ballast water.

2.2 If the flow through method is used, caution should be exercised, since:

- .1 air pipes are not designed for continuous ballast water overflow;
- .2 current research indicates that pumping of at least three full volumes of the tank capacity could be needed to be effective when filling clean water from the bottom and overflowing from the top; and
- .3 certain watertight and weathertight closures (e.g. manholes) which may be opened during ballast exchange, should be re-secured.

2.3 Ballast water exchange at sea should be avoided in freezing weather conditions. However, when it is deemed absolutely necessary, particular attention should be paid to the hazards associated with the freezing of overboard discharge arrangements, air pipes, ballast system valves together with their means of control, and the accretion of ice on deck.

2.4 Some ships may need the fitting of a loading instrument to perform calculations of shear forces and bending moments induced by ballast water exchange at sea and to compare with the permissible strength limits.

2.5 An evaluation should be made of the safety margins for stability and strength contained in allowable seagoing conditions specified in the approved trim and stability booklet and the loading manual, relevant to individual types of ships and loading conditions. In this regard particular account should be taken of the following requirements:

1. stability to be maintained at all times to values not less than those recommended by the Organization (or required by the Administration);
2. longitudinal stress values not to exceed those permitted by the ship's classification society with regard to prevailing sea conditions; and
3. exchange of ballast in tanks or holds where significant structural loads may be generated by sloshing action in the partially filled tank or hold to be carried out in favourable sea and swell conditions so that the risk of structural damage is minimized.

2.6 The ballast water management plan should include a list of circumstances in which ballast water exchange should not be undertaken. These circumstances may result from critical situations of an exceptional nature, force majeure due to stress of weather, or any other circumstances in which human life or safety of the ship is threatened.

3 Crew training and familiarization

3.1 The ballast water management plan should include the nomination of key shipboard control personnel undertaking ballast water exchange at sea.

3.2 Ships' officers and ratings engaged in ballast water exchange at sea should be trained in and familiarized with the following:

1. the ship's pumping plan, which should show ballast pumping arrangements, with positions of associated air and sounding pipes, positions of all compartment and tank suction and pipelines connecting them to ship's ballast pumps and, in the case of use of the flow through method of ballast water exchange, the openings used for release of water from the top of the tank together with overboard discharge arrangements;
2. the method of ensuring that sounding pipes are clear, and that air pipes and their non-return devices are in good order;
3. the different times required to undertake the various ballast water exchange operations;
4. the methods in use for ballast water exchange at sea if applicable with particular reference to required safety precautions; and
5. the method of on-board ballast water record keeping, reporting and recording of routine soundings.

Chapter 11

SUMMARIES OF EXISTING NATIONAL, REGIONAL OR LOCAL QUARANTINE REQUIREMENTS FOR BALLAST WATER MANAGEMENT.

This Chapter is intended as a guide to the officer in charge of ballast management on board the vessel. This information should be used in conjunction with updated rules and regulations as applicable and should not be considered as complete. Please refer to the proper National and International regulations to keep ballast management practices updated.

Information shown:

1. Country or locality
2. Monitoring Authority
3. Ports Affected
4. Ships Affected
5. Implementation
6. Date of Start
7. Methods Acceptable
8. Are unwanted aquatic organisms or pathogens defined?
9. Are uptake control measures specified?
10. What sampling is required?
11. What records are required
12. What procedure must be undertaken if *en route* treatment or exchange is not possible?
13. What procedures should be undertaken if ballast is found to be unacceptable after testing?
14. Further information.

NATIONAL REQUIREMENT

Country: **Australia**

National Monitoring Authority: Australian Quarantine and Inspection Service.

Ports affected: All

Ships affected: All ships entering Australian ports from overseas territories. No exceptions specified.

Implementation Voluntary compliance, but mandatory reporting using form opposite, and mandatory payment of a ballast water levy. Ballast water management (eg. exchange in mid-ocean) will become compulsory on completion of legislation during 2000.

Date of start: 1992

Methods acceptable:

Ballast water exchange in deep ocean areas:

- Tanks to be drained until pump suction is lost.
- Flow through method with 3 x tank volume pumped through.
- Compliance regime in agreement with AQIS

Other in-tank treatment agreed with AQIS (only AQIS heat treatment method approved as yet for cross equatorial voyages. Further information available from AQIS).

Unwanted aquatic organisms or pathogens: Target list available from AQIS. Sediment unwelcome.

Uptake control measures:

Minimise uptake of silt.

Where practicable, avoid taking ballast:

- in shallow water,
- in vicinity of dredging operations,
- where there is a known outbreak of disease communicable through ballast water,
- where phytoplankton blooms are occurring.

Sampling required: Targeted, random and mandatory, under supervision of AQIS officer.

Records and reports required: Record time, location, volume and salinity of all ballast water loaded, exchanged at sea, and discharged. Report to be made before arrival, using ballast water reporting form, and sent with AQIS Quarantine Declaration for Vessels.

Procedures if en route management is not possible:

1. Normal discharge based on risk assessment taking into account type of vessel, origin, risk factors at port of entry, eg. fish farms.
2. Withholding discharge until analysis of samples found to be free of harmful organisms.
3. Ship proceed to designated area or open sea to exchange ballast.

Procedure if ballast water found to be unacceptable after sampling:

Ship proceed to designated area or open sea to exchange ballast.

For further information refer to: AQIS Australian Ballast Water Management Guidelines, and IMO Resolution A.868(20). For those with access to the Internet, comprehensive and up-to-date guidance can be obtained on <http://www.aqis.gov.au>

- ♦ TO BE COMPLETED BY ALL VESSELS >25 METRES AND TO BE FORWARDED TO AQIS PRIOR TO VESSEL'S FIRST PORT ARRIVAL.
- ♦ MUST ACCOMPANY AQIS QUARANTINE DECLARATION FOR VESSELS FORM.

1. DO YOU INTEND DISCHARGING ANY BALLAST WATER IN AN AUSTRALIAN PORT? **TICK THE BOX** YES - complete questions 2, 3, 4, 5, 6, 7 and 8 **NO** - complete question 2, 3, 4, 7 and 8

2. VESSEL INFORMATION Name:	IMO/(Lloyds) No.:	Arrival Date:
Type:	Gross Tonnage:	Arrival Port:
Manager:	Agent:	Next Ports in Australia:

3. BALLAST WATER

4. LAST THREE (3) PORTS, DATES AND COUNTRIES OF BALLAST WATER UPTAKE

Total Ballast on Board (Metric tonnes):
Total Ballast Capacity (Metric tonnes):
Total Number of Ballast Tanks:

(i) Last PORT and DATE:	Co Contry:
(ii) 2nd Last PORT and DATE:	Country:
(iii) 3rd Last PORT and DATE:	Country:

5. BALLAST WATER HISTORY ON PAGE 2 RECORD ALL TANKS THAT WILL BE DISCHARGED IN AUSTRALIAN PORTS FOR CURRENT VOYAGE ON PAGE 2 (ATTACHED) - PLEASE SEND BOTH PAGES TOGETHER

6. IF EXCHANGES WERE NOT CONDUCTED OR NOT EXCHANGED FULLY IN ANY OF THE TANKS/HOLDS LISTED IN QUESTION FIVE, PLEASE STATE REASON WHY NOT

7. IS THERE A PLAN FOR BALLAST WATER MANAGEMENT ON BOARD? **TICK THE BOX** YES NO **HAS THIS BEEN IMPLEMENTED? TICK THE BOX** YES NO

8. OFFICER'S DECLARATION: NAME (PRINT) _____ RANK: _____

OFFICER'S SIGNATURE: _____ DATE: ____/____/____

IF YOU HAVE VISITED IN THE LAST THREE (3) MONTHS, REPORT DATE BALLAST WATER LEVY LAST PAID: _____

Note: Masters (or Delegated Officer) who wilfully make a false statement, may be liable to a significant fine and/or imprisonment under Australian Law

THIS COMPLETED FORM MUST BE ATTACHED TO PAGE 1 BEFORE SUBMISSION

(QUESTION 5. CONT'D) VESSEL INFORMATION:

Name:	IMO/(Lloyds) No.:
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Tanks/Holds (List multiple tanks/sources separately)	BW SOURCE			BW EXCHANGE Method used (tick the box): Empty/Refill <input type="checkbox"/> OR Flow Through <input type="checkbox"/>						BEST ESTIMATE OF BW DISCHARGE If estimate changes, please submit amended form to AQIS – mark it “AMENDED”			
	Date of Uptake DDMMYY	Last Location of uptake Port name or if not at Port, Lat and Long	Vol. Taken Up (Metric Tonnes)	Date/s of Exchange DDMMYY	Start Point (degrees only)		End Point (degrees only)		Vol. Exchanged (Metric Tonnes)	% Exch.	Australian Port/s of Discharge	Date/s of Discharge DDMMYY	Vol. of Discharge (Metric Tonnes)
					LAT	LONG	LAT	LONG					

BALLAST WATER TANK CODES: Forepeak = FP; Aftpeak = AP; Bottom = B; Double Bottom = DB; Wing = WT; Topside = TS; Cargo Hold = CH; Other (specify) = O

OFFICER'S DECLARATION: NAME (PRINT) _____ RANK: _____

OFFICER'S SIGNATURE: _____ DATE: ___/___/___

Note: Masters (or Delegated Officer) who wilfully make a false statement, may be liable to a significant fine and/or imprisonment under Australian Law

AQIS - BALLAST WATER REPORTING FORM

Quarantine Act 1908

DATE OF EFFECT 1 MAY 1999

TO BE COMPLETED BY ALL VESSELS GREATER THAN 25 METRES NOT EQUIPPED WITH A FAX AND TO BE PROVIDED TO AQIS PRIOR TO VESSEL'S FIRST AUSTRALIAN PORT ARRIVAL.

MUST ACCOMPANY AQIS QUARANTINE DECLARATION FOR VESSELS FORM.

Please telex your answers only in the following order and under the following headings. It is only necessary to type the number and letter preceding the question and to provide the answers.

1. DO YOU INTEND DISCHARGING ANY BALLAST WATER IN AN AUSTRALIAN PORT?

Answer by writing YES or NO

If yes - refer to questions 2, 3,4, 5, 6, 7 AND 8

If no - refer to 2, 3,4, 7 AND 8 only

2. VESSEL INFORMATION

2A Name

2B Type

2C Manager

2D IMO/Lloyds No.

2E Gross tonnage

2F Agent

2G Arrival Date

2H Arrival Port

2I Next Port/s in Australia

3. BALLAST WATER

3A Total Ballast on Board in metric tonnes

3B Total Ballast Capacity in metric tonnes

3C Total Number of Ballast Tanks

4. LAST THREE (3) PORTS, DATES AND COUNTRIES OF BALLAST WATER UPTAKE

4Ai Port (Last Port), Date, Country

4Bii Port (2nd Last Port), Date, Country

4Ciii Port (3rd Last Port), Date, Country

5. BALLAST WATER HISTORY

Record requested details for all tanks that will be discharged in Australian ports for current voyage. This section must be completed separately for each tank that will be discharged in Australian waters (unless tank sizes and ballast water volumes are identical). Answer all questions for each tank in Section 5 before moving onto Section 6.

5A Tank/Hold

5B Ballast Water Source

5Bi Date of Uptake DDMMYY

5Bii Port Name, or if not in port, give Lat. and Long. (DEGREES ONLY, NO MINUTES)

5Biii Vol. Taken Up (in metric tonnes)

5C BW Exchange

5Ci Exchange method was empty-refill OR flow-through. Answer by listing one of these methods.

5Cii Date/s of exchange (DDMMYY)

5Ciii Start Point Lat. and Long.
(DEGREES ONLY, NO MINUTES)

5Civ End Point Lat. and Long.
(DEGREES ONLY, NO MINUTES)

5Cv Volume Exchanged (in metric tonnes)

5Cvi % Exchange (percentage of original ballast volume exchanged)

5D BW Discharge – best estimate of volume to be discharged

5Di Australian Port/s of Discharge

5Dii Expected Date/s of Discharge (DDMMYY)

5Diii Expected Volume of Discharge (in metric tonnes)

BALLAST WATER TANK CODES Full Tank-F. Forepeak-FP. Aftpeak-AP. Double Bottom-DB. Wing-WT. Topside-TS. Cargo Hold-CH. Other - specify.

6. REASONS FOR FAILURE TO EXCHANGE

If exchanges were not conducted in any of the tanks or holds listed above, please list tank/hold and state reason why not. This Section MUST be completed if mid-ocean exchange was not achieved.

7. BALLAST WATER MANAGEMENT PLANS

7A Plan for ballast water management on board, write YES or NO

7B Has this been implemented, write YES or NO

8. OFFICER'S DECLARATION

8A Responsible officer name and rank

8B Date DDMMYY

IF YOU HAVE VISITED AUSTRALIA IN THE LAST THREE (3) MONTHS, REPORT DATE BALLAST WATER LEVY LAST PAID.

Note - Masters or Delegated Officers who wilfully make a false statement may be liable to a significant fine and/or imprisonment under Australian Law.

AUSTRALIAN QUARANTINE AND INSPECTION SERVICE

Department of AGRICULTURE, FISHERIES AND FORESTRY - AUSTRALIA

Instructions for completing the AQIS ballast water reporting form

General

The AQIS Ballast Water Reporting Form must be completed by all international ships before visiting their first Australian port of call, and must be sent to AQIS with the AQIS Quarantine Declaration for Vessels form. The Quarantine Declaration must be completed no more than 24 hours and no less than 12 hours before a ship enters its first Australian port of call. Instructions are provided below for each request on the Ballast Form.

Please provide the date you last paid the Ballast Water Levy if you have visited an Australian Port in the last three months.

1. Ballast Water Intentions - THIS MUST BE ANSWERED. Do you intend discharging any ballast water in any Australian port?.

Tick **YES** if the ship intends discharging ballast water in any Australian port, otherwise tick **NO**.

If the answer to this question is **YES**, then comprehensive information on each ballast tank that will be discharged in any Australian port should be provided in accordance with the requests under section 5, **Ballast Water History**. If ballast water exchange has not been fully undertaken in any of the tanks listed for discharge in an Australian port, then Question 6 **MUST** be completed, giving reasons for not exchanging, and/or not exchanging fully.

If the answer to this question is **NO**, then there is no need to complete the requests for information at Section 5 or 6.

Please fill out sections 2, 3, 4, 7 and 8.

Fresh Water: If all tanks intended for discharge are carrying water from freshwater environments, write „FRESH WATER ONLY”.

2. Vessel Information

This section requires standard ship information.

Name: Print the name of the ship clearly.

Type: List ship type, ie bulk, roro, container, tanker, passenger, oil/bulk ore, general cargo, reefer, etc.

Manager: Print the name of the ship's Manager.

IMO/(Lloyd's) No.: Fill in the ship's unique identification number, as used by the IMO.

Gross Tonnage: Provide the gross tonnage of the ship.

Agent: List the agent used for this voyage. If your ship is visiting more than one Australian port and you propose using different agents in each Australian port, please list all agents in order of Australian first and last port visits.

Arrival Date: Fill in the arrival date for the first Australian port of call. Please use the format DD/MM/YY.

Arrival Port: Write in the name of the intended first Australian port of call.

Next Port/s in Australia: Write in any other ports in Australia that the ship intends visiting after leaving its first Australian port of call. Please list in sequential order of visit.

3. Ballast Water

This section requires information on the expected total ballast carried on board when entering Australian waters, the ship's ballast capacity, and the total number of ballast tanks on the ship including any cargo holds used for ballast on the voyage to Australia.

Total Ballast on Board (in metric tonnes): What is the total volume of ballast water on board upon arrival at the ship's first Australian port of call.

Total Ballast Capacity (in metric tonnes): What is the maximum volume of ballast water that can be carried by this ship.

Total Number of Ballast Tanks: List the total number of ballast tanks on the ship. Include any holds that are used for ballast water.

4. Last Three (3) Ports, Dates and Countries of Ballast Water Uptake

This section requires information on the last three ports and dates of ballast uptake before a ship enters its first Australian port of call. The ports and countries should be listed **by name**. The dates should be expressed in DD/MM/YY.

List the ports as *most recent* port of ballast water uptake at (i), the *second most recent* at (ii), and the *third most recent* at (iii).

Where there has been no uptake of ballast in a port or nearby coastal waters, state "MID-OCEAN UPTAKE ONLY" in each box.

On the telex version of the Ballast Water Reporting Form, list the ports as *most recent* port of ballast water uptake at (4Ai), the *second most recent* at (4Bii), and the *third most recent* at (4Ciii).

5. Ballast Water History

This section **MUST** be completed if you intend discharging ballast water in an Australian port, or ports. It will allow AQIS to determine whether sufficient ballast water exchange has occurred. As the Form is to be forwarded before a ship's arrival in port, the volume of discharge should be estimated. If this estimation changes once a ship has reached port, AQIS should be notified as volumes discharged may be verified by an AQIS officer.

Tanks/Holds: Please list **all ballast tanks and holds** that will be discharged in Australian waters. For each tank completes the questions across the page (see further down for instructions). List each tank on a separate line (unless two tanks, i.e. opposing wing tanks, are **precisely** identical in every detail, eg WT 2 & 4). Use the tank abbreviations listed at the bottom of Section 5 on the form. If there is insufficient space to complete information for each tank in relation to each port of discharge, the Form can be copied and another sheet used for the additional information. In this case it is only necessary to provide the **Ship Name and IMO/Lloyd's No. on a third sheet**, as well as continuing the completion of information under **5. Ballast Water History**.

BW Source

Date of Uptake DDMMYY: Write the date of ballast water uptake. Please use the format DD/MM/YY.

Last Port of Uptake: List the *port* where ballast water was last taken up for the voyage. If ballast water was not taken up at a port, please list the coordinates of uptake using **degrees only (DO NOT USE MINUTES)**.

Vol. Taken Up (in metric tonnes): Record the volume of ballast water uptake.

BW Exchange

THIS MUST BE COMPLETED. Tick method of exchange ie empty/refill AND/OR flow-through for three times flow through method (see Australian Ballast Water Guidelines for details).

Date/s of Exchange DDMMYY: Write in date of ballast water exchange, using the format DD/MM/YY. If exchanges occurred over multiple days, list the range of days over which exchange occurred, using the format DD¹–DD²/MM/YY, where DD¹ is the starting date for exchange and DD² is the finishing date of exchange.

Start Point Lat. Long.: Report location where ballast water exchange began using **degrees only (DO NOT USE MINUTES)**.

End Point Lat. Long.: Report location where ballast water exchange ended using **degrees only (DO NOT USE MINUTES)**.

Volume Exchanged (in metric tonnes): Record the volume of ballast water exchanged.

% Exchange: Use the formula: $\% \text{ Exchange} = \frac{\text{Total volume of refill or flow-through water}}{\text{Original volume of ballast water}} \times 100$

List the volume of ballast water that, in the case of empty/refill, should be as close to 100% as possible. For flow through exchange the volume flowed through the tanks should be three times the volume originally held in the tanks, i.e. this figure should be at least 300%.

BW Discharge

If a ship intends discharging at more than one Australian port, then all ports of discharge must be noted, and best estimates of volumes to be discharged at each port should be entered. *This will require repeat listings of those tanks intended for discharge at more than one Australian Port. If best estimate changes, please submit amended Ballast Water Reporting Form to AQIS. Mark it "AMENDED".*

Australian Port/s of Discharge: Report intended location, using port name of ballast water discharge. Do not abbreviate port names.

Date/s of Discharge DDMMYY: Write in intended date of ballast water discharge, using the format DD/MM/YY. If discharge will occur over multiple days, list the range of days over which discharge is intended to occur, using the format DD¹–DD²/MM/YY, where DD¹ is the starting date for discharge and DD² is the finishing date of discharge.

Vol. Of Discharge (in metric tonnes): Record the volume of ballast water intended for discharge (in metric tonnes). This should be as accurate an estimation as possible.

6. Reason for Failure to Exchange

This section seeks an explanation for the failure to fully exchange ballast water in mid-ocean of any or all of its tanks intended for discharge in an Australian port. Reasons for failure to exchange may be that exchange was unsafe due to weather, or the structural capacity of the ship. If weather is proposed as a reason for failure to exchange, this may be verified by AQIS using the mid-ocean coordinates travelled by the ship and weather reports. If structural safety is proposed, an AQIS officer may ask to see the ship's ballast water management plan, ISM Plan, or other documentation to verify this.

If exchanges were not conducted in any of the tanks/holds listed above, please state reasons why not: List specific reasons why ballast water exchange was not performed. This applies to *all tanks* being discharged in Australian waters.

7. Ballast Water Management Plans

The *Guidelines for the Control and Management of Ship's Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens* adopted by the IMO in November 1997, ask that ships carry ballast water management plans on board. This will mean that ballasting processes are well documented and the structural capacity of the ship to exchange ballast in

mid-ocean will be verified. The Plan was developed by the International Chamber of Shipping and Intertanko and a model is available from fax: + 44 171 417 8877, or e-mail: ics@marisec.org.

Ballast water management plan on board. Is there a plan for ballast water management on board this ship as defined under the *IMO Ballast Water Guidelines*⁷ and the *Australian Ballast Water Management Guidelines*? **YOU MUST** tick **Yes** or **No**. This Plan was only recently developed by the IMO, and although not a mandatory requirement by Australia, ships are encouraged to develop and maintain on board a ballast water management plan.

Has this been implemented? Was the plan implemented on the voyage to Australian waters? Tick **Yes** or **No**.

8. Officer's Declaration

Responsible officer's name and title (printed) and signature: Print name, rank and include signature. Date the form DDMMYY.

Note: Masters or Delegated Officers who wilfully make a false statement may be liable to a significant fine and/or imprisonment under Australian law.

Disclaimer

By accessing the information presented through this media, each user waives and releases the Commonwealth of Australia to the full extent permitted by law from any and all claims relating to the usage of material or information made available through the system. In no event shall the Commonwealth of Australia be liable for any incidental or consequential damages resulting from use of the material. In particular and without limit to the generality of the above, information provided in publications of the Commonwealth Government is considered to be true and correct at the time of publication. Changes in circumstances after time of publication may impact on the accuracy of this information and the Commonwealth Government gives no assurance as to the accuracy of any information or advice contained.

⁷„Guidelines for the control and Management of Ship's Ballast Water to Minimise the Transfer of Harmful Aquatic Organism and Pathogens“, Res. A. 868(20).

NATIONAL REQUIREMENT

Country: **BRAZIL**

National Monitoring Authority: Not known.

Ports affected: All.

Ships affected: All ships bound for a Brazilian port.

Implementation: Mandatory reporting.

Date of start:

Methods acceptable: Not applicable.

Unwanted aquatic organisms or pathogens: Not applicable.

Uptake control measures: Not applicable.

Sampling required: Not known.

Reports and records required: Health Authorities in all Brazilian ports require a standard message from the Master, stating when and where the vessel loaded ballast water, and the quantity on board on arrival. The information to be sent at least 72 hours prior to arrival, in order to obtain "Free Pratique" and to avoid anchoring for inspection.

Procedure if en route management is not possible: Not applicable

Procedure if ballast water found to be unacceptable after sampling:

Not applicable.

For further information refer to: No information available.

NATIONAL REQUIREMENT

Country: **Chile**

National Monitoring Authority: Chilean Navy; Division for Maritime Territory and the Merchant Marine, Maritime Safety and Operations Department. .

Ports affected: All

Ships affected: All ships coming from abroad, ballasted with sea water. No exceptions are listed.

All ships coming from zones affected by cholera or by any similar contagious epidemic.

Implementation: Mandatory application.

Date of start: 10 August 1995

Methods acceptable:

Ballast water exchange in deep water. Entries in bridge and engine room logbooks, showing geographical co-ordinates, amount replaced and what percentage of total ballast capacity it represents.

Unwanted aquatic organisms or pathogens: Not defined.

Uptake control measures: None specified.

Sampling required: Not defined.

Records required: Log book entry as above.

Procedures if en route management is not possible:

In-tank treatment prior to discharge. Addition of 100 grams of powdered sodium hypochlorite, or 14 grams of powdered calcium hypochlorite, per tonne of ballast water, ensuring thorough mixing, and then allowing 24 hours before beginning to deballast.

Procedure if ballast water found to be unacceptable after sampling:

Not known.

For further information refer to: Chilean Declaration DGTM. and MM. ORD. NO. 12600/228 VRS. Order for Preventative Measures to Avoid Transmission of Harmful Organisms and Epidemics by Ballast Water. 10th August 1995

NATIONAL REQUIREMENT

Country: **Israel**

National Monitoring Authority: Ministry of Transport, Administration of Shipping and Ports.

Ports affected: All

Ships affected: All ships destined for Israeli ports, wishing to pump out ballast water while in port or while navigating along the coast of Israel. No exceptions are listed.

Implementation: Mandatory application.

Date of start: 15 August 1994

Methods acceptable:

Ballast water that has not been taken on in open ocean, must be exchanged in open ocean, beyond any continental shelf or fresh water current effect. Masters will be requested to provide ships' inspectors (pilots) with a completed ballast water exchange report.

Ships bound for Eilat must exchange outside of the Red Sea, when practicable. Ships bound for Mediterranean ports must exchange in the Atlantic Ocean when practicable.

Unwanted aquatic organisms or pathogens: Not defined.

Uptake control measures: None specified.

Sampling required: Not defined.

Records required: Israel has issued a format for recording the status of ballast. A copy is shown on page [].

Procedures if en route management is not possible:

Retention on board.

Procedure if ballast water found to be unacceptable after sampling:

Retention on board.

For further information refer to:

Israel Notice to Mariners No. 4/96 dated 19th April 1996.

**Israel
Ballast Water Exchange**

VESSEL NAME		PORT OF REGISTRY	OFFICIAL NUMBER
OVERALL LENGTH	BEAM	MOULDED DEPTH	PRESENT DRAFT FWD _____ AFT _____
OWNERS		AGENTS	
CARGO		LOADING PORT(S) (WITH TONNAGES)	
DATES			
WILL VESSEL DEBALLAST DURING THIS CALL IN ISRAELI PORTS Y / N IF YES SPECIFY UNITS M ³ /MT/LT/ST/ _____			
FULL BALLAST CAPACITY (TONNES):		DISTRIBUTION (TANK NO. AND CAPACITY)	
WHERE WAS BALLAST TAKEN ON? (INCLUDE DATE)			
LOCATION _____		DATE _____ 20__	
LOCATION _____		DATE _____ 20__	
WAS BALLAST EXCHANGED DURING VOYAGE YES _____ NO _____			
IF YES PLEASE INDICATE DATE AND LOCATION			
LOCATION _____		DATE _____ 20__	
LOCATION _____		DATE _____ 20__	
MASTER'S NAME (PRINT)		MASTER'S SIGNATURE	
PLACE: DATE _____ 20__		SHIP'S STAMP	

NATIONAL REQUIREMENT

Country: **New Zealand.**

National Monitoring Authority: New Zealand Ministry of Fisheries.

Ports affected: All

Ships affected: All ships entering New Zealand territorial seas carrying ballast water loaded within the territorial water of another country. No exceptions are listed.

Implementation: Compliance with guidelines requiring mid-ocean exchange of ballast water. An import health standard for ballast water came into effect on 30 April 1998, applying to ballast water loaded in another country and due for discharge in New Zealand. It requires that ballast water to be discharged has been exchanged in mid-ocean.

Use of reporting form prior to arrival in first New Zealand port, and on departure from final New Zealand port, is mandatory. Examples of the arrival and departure forms are given opposite.

Date of start: 1996. Mandatory measures from 30 April 1998.

Methods acceptable:

1. Ballast water exchange in deep water.
2. Use of fresh water in ballast tanks (<2.5ppt NaCl).
3. Use of approved on-shore treatment facility (none approved yet).
4. Use of approved in-tank treatment (none approved yet).
5. Discharge into an approved low risk zone (none approved yet).

Unwanted aquatic organisms or pathogens: Not defined.

Uptake control measures: None specified. However, masters are expected to use their discretion and care when loading ballast water, avoiding where possible, taking ballast in shallow water, in areas where there is known to be active algal blooms or an outbreak of any disease communicable through ballast water, and in the vicinity of dredging operations.

Sampling required: Not defined.

Records required: Location and volume of ballast water loaded in other port;
location, volume, method and duration of exchange at sea;
location, volume and date of discharge in New Zealand.

Procedures if en route management is not possible: Until other treatment options are available, discharge will be permitted if it can be shown that weather conditions and/or vessel design precluded safe exchange, and the ballast water for discharge was not loaded in an area listed in Annex 1 of the Import Health Standard (currently Tasmania and Port Philip Bay, Australia).

For further information refer to:

New Zealand Import Health Standard for Ballast Water from All Countries.

New Zealand Ballast Water and Ships Hull De-fouling: a Government Strategy January 1998.

New Zealand reporting form

VESSEL BALLAST WATER REPORTING FORM: PART 1

**TO BE COMPLETED FOR ALL
INTERNATIONAL VESSELS ARRIVING IN NEW ZEALAND**

Does this vessel carry any ballast water loaded in the territorial waters of a country other than New Zealand? If NO, go to question 5.	YES / NO
Does this vessel carry any ballast water loaded in a place listed in Annex 1, including any tank that may contain at least 25% of such water? (A copy of the New Zealand Import Health Standards is available from an inspector).	YES / NO List Each Tank Number and Type (see codes below):
How will you comply with all NZ controls regarding ballast water discharge? (See New Zealand Import Health Standards). Select more than one option if applicable. If you cannot comply, go to question 4.	
By refraining from discharging any ballast water in NZ waters.	YES / NO
By having emptied then re-filled in mid-ocean all tanks from which ballast water will be discharged in New Zealand waters?	YES / NO Average Speed of Vessel During Exchange (knots):
By having exchanged water in any tanks to be discharged in NZ waters, using a flow-through technique which pumped through the tank a volume of mid-ocean water equal to at least 3 times the tank capacity.	YES / NO Average Speed of Vessel During Exchange (knots):
The water to be discharged is fresh water (< 2.5 ppt NaCl). State when and where the water was loaded.	YES / NO Date: Port or Position:
If you cannot comply, state reason(s) for non-compliance.	
Vessel is not physically capable of either empty/refill or flow-through exchange to meet New Zealand requirements.	YES / NO Specify Details:
Exchange would have caused unacceptable risk to crew or vessel due to weather conditions.	YES / NO Specify Details:
Do you intend to discharge sediments or other debris collected from ballast tanks/holds (excluding normal deballasting), anchors, chains or chain lockers within the New Zealand 12 Nautical mile limit? If YES, state when and where.	YES / NO Date: Port or Position:
<i>Please note that sediments must be discharged in an approved landfill.</i>	
When and where was the vessel last dry-docked and cleaned?	Date: Port or Position:
Has the vessel been laid-up for 3 months or more since it was last dry-docked and cleaned? If YES, state when and where.	YES / NO Date Started: Date Finished: Port or Position:
Do you intend to clean the hull of the vessel in New Zealand? If YES, state when and where.	YES / NO Date: Port or Position:

VESSEL BALLAST WATER REPORTING FORM: PART 2

TO BE COMPLETED FOR ALL INTERNATIONAL VESSELS ON DEPARTURE FROM NEW ZEALAND

1. VESSEL INFORMATION	Vessel's Name:	IMO Number:	Vessel's Call Sign:
Flag:	Vessel's Owner:	Vessel's Agent:	Gross Tonnage (MT):
Type of Vessel: Bulk Container Tanker RORO/Cars Fishing Other(specify)			Date Built:
Total Number of Ballast Tanks On Board Vessel:	Total Ballast Water Capacity of Vessel (specify units; m ³ , MT):		

2. THIS VOYAGE	Arrival Port:	Last Overseas Port:
Date of Departure from New Zealand:	Departure Port:	Next Overseas Port:
Total Number of Tanks in Ballast on Arrival in New Zealand:	Total Ballast Volume on Arrival in New Zealand (specify units; m ³ , MT):	

3. BALLAST WATER DISCHARGED IN NEW ZEALAND (If none, go to question 4.) **TICK HERE IF THIS SECTION IS A CONTINUATION OF ANOTHER FORM**

IMPORTANT:
 In the table below **BALLAST WATER SOURCE** refers to ballast taken on board in countries **other than New Zealand**. For tanks with ballast from more than one source, list the 2 most recent sources on separate lines.
 All tanks **discharged** in New Zealand that contained **any** ballast from another country **must be listed**. List multiple **BALLAST WATER EXCHANGE** operations on separate lines. Use additional forms if necessary.

TANK NO. and TYPE (see codes below)	BALLAST WATER SOURCE										BALLAST WATER DISCHARGED		
	PORT or LAT./LONG.	VOLUME LOADED (specify units)	FINAL VOLUME IN TANK (specify units)	START DATE FINISH DATE (DD/MM/YY)	START TIME FINISH TIME (HH:MM)	START LAT. LONG. FINISH LAT. LONG.	DISTANCE RUN (Nm)	TOTAL PUMP RATE (specify units)	VOLUME EXCHANGED (specify units)	DATE DISCHARGE D	PORT or LAT./LONG.	VOLUME DISCHARGED (specify units)	

Ballast tank codes: Upper=U, Lower=L, Forepeak=FP, Aftpeak=AP, Double Bottom=DB, Deep Tank=DT, Wing Tank=WT, Topside=TS, Cargo Hold=CH, Other (specify), Port=P, Starboard=S, (eg 3UWTP).

4. IMO BALLAST WATER GUIDELINES ONBOARD ? YES NO	RESPONSIBLE OFFICER'S NAME AND SIGNATURE:
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Compiled by Michael D. Taylor

NATIONAL REQUIREMENT

Country: U.S.A. (Note that this includes all States, Puerto Rico, the US Virgin Islands, Guam, American Samoa and US Trust Territory of the Pacific Islands.)

National Monitoring Authority: US Coast Guard (USCG).

Ports affected: All ports, including ports in the Great Lakes and Hudson River above the George Washington Bridge. (*But see State of California for further legislation, page [..].*)

Ships affected:

- A. All ships with ballast tanks, bound for the Great Lakes and / or the Hudson River above the George Washington Bridge and entering from outside the US and Canadian Exclusive Economic Zones (EEZ), or which took on new ballast in a North American port after entering the EEZ.
- B. All ships with ballast tanks, that operate in other waters of the United States, but with following exemptions:
- crude oil tankers engaged in US coastwise trade (ie. exclusively between U.S ports).
 - passenger ships equipped with, and correctly operating, treatment systems designed to kill aquatic organisms in ballast water, unless the USCG has determined that the system is less effective than ballast water exchange at sea.

Implementation:

- A. Mandatory ballast water management, record-keeping and reporting
- B. Mandatory record-keeping and reporting, but ballast water management is voluntary at present.

Date of start:

Great Lakes – May 1993; Hudson River – December 1994; all other ports – July 1999

Methods acceptable:

- Exchange ballast water at sea, before entering the U.S. exclusive economic zone (EEZ), in an area at least 200 miles from shore and a depth of more than 2000 metres.
- Retain ballast water on board ship.
- Employ an environmentally sound alternative ballast water management practice approved in advance by the USCG. (Send requests to Commandant, United States Coast Guard, 2100 2nd Street, Southwest, Room 2100; Washington DC 20593-0001, USA.)
- Discharge ballast water to an approved reception facility.
- Complete ballast water exchange in an alternative designated area approved in advance by the USCG Captain of the Port (COTP).

Unwanted aquatic organisms or pathogens: Not defined.

Uptake control measures:

- Avoid uptake (or discharge) in areas within or directly affecting marine sanctuaries, marine preserves, marine parks or coral reefs.
- Minimise or avoid uptake in areas known to have infestations or populations of harmful organisms or pathogens, near sewage outfalls or dredging operations, where tidal flushing is known to be poor or when a tidal stream is known to be more turbid, in darkness when bottom dwelling organisms are known to rise in the water column, or where propellers may stir up sediment.

Sampling required: The USCG may sample ballast water and sediment, examine documents, and make appropriate enquiries to assess compliance.

Records and reports required: The US has issued a format for recording the status of ballast and ballast tanks on arrival, as shown [opposite]. A copy of completed forms must be kept on board for at least two years. A report must be made on each call, containing the information, as follows:

- a ship bound for the Great Lakes must fax the information to the Captain of the Port (COTP) Buffalo (001-315-764-3283), at least 24 hours in advance;
- a ship bound for the Hudson River above the George Washington Bridge must fax the information to the COTP New York (001-718-354-4249) before the ship enters U.S. waters (12 miles from the baseline).
- a ship calling at other United States ports must, before departing from the first port of call in the U.S., either fax the information to the Commandant USCG (001-301-261-4319) or mail the information to USCG, c/o NBIC, Smithsonian Environmental Research Centre, PO Box 28, Edgewater, MD 21037-0028, USA. For ships able to use the Internet, this form can be completed and the information transmitted electronically (submitted on-line) to the National Ballastwater Information Clearinghouse (NBIC) using www.serc.si.edu/invasions/ballast/bwform.htm.

In each case, if the information submitted subsequently changes, an amended form must be submitted to the same authority before the ship clears U.S. waters.

Procedure if en route management is not possible:

For "Ships affected A", only:

- Retain ballast water on board.
- Complete ballast water exchange in alternative designated areas approved in advance by the USCG Captain of the Port.
- Alternative ballast water management practices approved in advance by the USCG.

Procedure if ballast water found to be unacceptable after sampling

Action required by ship not known, but note that failure to comply with mandatory provisions, and knowingly making a false declaration, may result in prosecution. In addition, the USCG may request US Customs to withhold or revoke the clearance required by 46 USC app.91 of any owner or operator of a ship not in compliance with these regulations.

For further information refer to:

- US Code of Federal Regulations (33 CFR Part 151, Subparts C and D).
- US Non-indigenous Invasive Species Act (1996 ?)
- Aquatic Nuisance Prevention and Control Act (16 US Code 4701, et sec)
- Commandant, United States Coast Guard, 2100 2nd Street, Southwest, Room 2100; Washington DC 20593-0001. (Telephone 001-202-267-0500)

From July 1999, the US Coast Guard will be monitoring all ships to gauge compliance. After two or three years, a report will be made, containing a recommendation as to whether the requirement for ballast water management should be made mandatory for ships calling at all U.S. ports

BALLAST WATER REPORTING FORM

(TO BE PROVIDED TO PORT STATE AUTHORITY UPON REQUEST)

IS THIS AN AMENDED BALLAST REPORTING FORM? YES NO

1. VESSEL INFORMATION

2. VOYAGE INFORMATION

3. BALLAST WATER USAGE AND CAPACITY

Vessel Name: M.V.	Arrival Port:	Specify Units Below (m³, MT, LT, ST)	
IMO Number:	Arrival Date:	Total Ballast Water on Board:	
Owner:	Agent:	Volume	Units No. of Tanks in Ballast
Type:	Last Port:	m ³	
GT:	Country of Last Port:	Total Ballast Water Capacity:	
Call Sign:	Next Port:	Volume	Units Total No. of Tanks on Ship
Flag:	Country of Next Port:	m ³	

4. BALLAST WATER MANAGEMENT

Total No. Ballast Water Tanks to be discharged:

Of tanks to be discharged, how many: Underwent Exchange: Underwent Alternative Management:

Please specify alternative method(s) used, if any: _____

If no ballast treatment conducted, state reason why not: _____

Ballast water management plan on board? YES NO Management plan implemented? YES NO

IMO ballast water guidelines on board [res. A.868(20)]? YES NO

5. BALLAST WATER HISTORY: Record all tanks that will be deballasted in port state of arrival; IF NONE GO TO NO.6 (Use additional sheets as needed)

Tanks/Holds (List multiple sources/tanks separately)	BW SOURCE				BW MANAGEMENT PRACTICES						BW DISCHARGE			
	DATE DDMMYY	PORT or LAT. LONG	VOLUME (m ³)	TEMP (°C)	DATE DDMMYY	ENDPOINT LAT. LONG	VOLUME (m ³)	% Exch	METHOD (ER/FT/ALT)	SEA Hgt. (m)	DATE DDMMYY	PORT or LAT. LONG	VOLUME (m ³)	SALINITY (units)
Fore Peak									--					
1 For'd									--					
1 Aft									--					
4P DB									--					
4S DB									--					
Aft Peak									--					
									--					
									--					

Ballast Water Tank Codes: Forepeak=FP, Aftpeak=AP, Double Bottom=DB, Wing=WT, Topside=TS, Cargo Hold=CH, Other=O

6. RESPONSIBLE OFFICER'S NAME AND TITLE (PRINTED) AND SIGNATURE: _____ - Chief Officer

INSTRUCTIONS FOR BALLAST WATER REPORTING FORM

(Please write in English and PRINT legibly.)

Is this an Amended Ballast Reporting Form?: Check Yes or No. Amendments should be submitted if there are any differences between actual ballast discharges and discharge information reported in a prior form. Please mark "Yes" if this form amends a previously submitted ballast reporting form.

SECTION 1. VESSEL INFORMATION

Vessel Name: Print the name of the vessel clearly.

IMO Number: Fill in identification number of the vessel used by the International Maritime Organization.

Owner: Write in the name of the registered owner(s) of the vessel. If under charter, enter Operator name.

Type: List specific vessel type. Use the following abbreviations: bulk (**bc**), ro-ro (**rr**), container (**cs**), tanker (**ts**), passenger (**pa**), oil/bulk ore (**ob**), general cargo (**gc**), reefer (**rf**). Write out any additional vessel types.

GT: What is the Gross Tonnage of the vessel?

Call Sign: Write in the official call sign.

Flag: Fill in the full name of the country under whose authority the ship is operating. No abbreviations please.

SECTION 2. VOYAGE INFORMATION

Arrival Port: Write in the name of your first port of call after entering the U.S. EEZ or St. Lawrence Seaway. No abbreviations. **Arrival Date:** Fill in the arrival date to the above port. Please use European date format (DDMMYY).

Agent: List agent used for current port.

Last Port: Fill in the last port at which the vessel called immediately before entering the U.S. EEZ.

No abbreviations please.

Country of Last Port: Fill in the last country at which the vessel called immediately before entering the U.S. EEZ.

No abbreviations please.

Next Port: Fill in the port at which the vessel will call immediately after departing the current port

("Current Port"="Arrival Port" above). No abbreviations please.

Country of Next Port: Fill in the country of "Next Port" at which the vessel will call immediately after current port. No abbreviations please.

SECTION 3. BALLAST WATER

Total Ballast Water on Board:

Volume: What was the total volume of ballast water on board upon arrival into the waters of U.S. EEZ? Do not count potable water.

Units: Please include volume units (m³, MT, LT, ST).

Number of Tanks in Ballast: Count the number of ballast tanks and holds with ballast as vessel enters waters inside the

United States EEZ.

Total Ballast Water Capacity:

Volume: What is the maximum volume of ballast water used when no cargo is on board?

Units: Please include volume units (m³, MT, LT, ST).

Total Number of Tanks on Ship: Count all tanks and holds that can carry ballast water (do not include tanks that carry

potable water).

SECTION 4. BALLAST WATER MANAGEMENT

Total No. of tanks to be discharged: Count only tanks and holds with ballast to be discharged into waters inside the United States EEZ or into an approved reception facility. Count all tanks and holds separately (e.g., port and starboard tanks should be counted separately).

Of tanks to be discharged, how many Underwent Exchange: Count all tanks that are to be discharged into waters of the

United States or into an approved reception facility.

Of tanks to be discharged, how many Underwent Alternative Management: Count all tanks that are to be discharged into

waters of the United States or an approved reception facility.

Please specify alternative method(s) used, if any: Specifically, describe methods used for ballast management.

If no ballast treatment conducted, state reason why not: This applies to all tanks and holds being discharged into waters of the

United States or into an approved reception facility.

Ballast Management Plan on board?: Is there a written document on board, specific to your vessel, describing the procedure for ballast management? This should include safety and exchange procedures (usually provided by vessel's owner or operator). Check Yes or No.

Management Plan implemented?: Do you follow the above management plan? Check Yes or No.

IMO Ballast Water Guidelines on board?: Is there a copy of the International Maritime Organization (IMO) Ballast Water Guidelines on board this vessel (i.e. "Guidelines for the Control and Management of Ship's Ballast Water to Minimize the Transfer Aquatic Organisms and Pathogens", [Res. A.868(20)])? Check Yes or No.

SECTION 5. BALLAST WATER HISTORY

(Record all tanks to be deballasted in port state of arrival: If none, go to #6)

Tanks/Holds: Please list all tanks and holds that you have discharged or plan to discharge into waters of the United States or into an approved reception facility (write out, or use codes listed below table). Follow each tank across the page listing all source(s), exchange events, and/or discharge events separately. List each tank on a separate line. Port and starboard tanks with identical ballast water histories may be included on same line. Please use an additional page if necessary, being careful to include ship name, date, and IMO number at the top of each. For tanks with multiple sources: list 3 largest sources from last 30 days on separate lines. If more than 3 sources, include a 4th line for the respective tank(s) that indicated "Multiple" in port column and list the remaining tank volume not included in the 3 largest sources (i.e., total tank volume minus volume of the 3 largest sources). See example #1 on sample ballast reporting form.

-BW SOURCES-

Date: Record date of ballast water uptake. Use European format (DDMMYY).

Port or latitude/longitude: Record location of ballast water uptake, no abbreviations for ports.

Volume: Record total volume of ballast water uptake, with volume units.

Temp: Record water temperature at time of ballast water uptake, in degrees Celsius (include units).

-BW MANAGEMENT PRACTICES-

Date: Date of ballast water management practice. If exchanges occurred over multiple days, list the day when exchanges were completed. Use European format (DDMMYY).

Endpoint or latitude/longitude: Report location of ballast water management practice. If an exchange occurred over an extended distance, list the end point latitude and longitude.

Volume: Report total volume of ballast water moved (i.e., gravitated and pumped into tanks, discharged to reception facility) during management practice, with units.

% Exch.: (Note: for effective flow through exchange, this value should be at least 300%).

$$\% \text{ Exchange} = \frac{\text{Total Volume added by Refill or Flow Through}}{\text{Capacity of Ballast Tank or Hold}} \times (100\%)$$

Method: Indicate management method using code (ER = empty/refill, FT = flow through, ALT = alternative method).

Sea Ht . (m): Estimate the sea height in meters at the time of the ballast water exchange if this method was used. (Note: this is the combined height of the wind-seas and swell, and does not refer to water depth).

-BW DISCHARGES-

Date: Date of ballast water discharge. Use European format (DDMMYY).

Port or latitude/longitude: Report location of ballast water discharge, no abbreviations for ports.

Volume: Report volume of ballast water discharged, with units.

Salinity: Document salinity of ballast water at the time of discharge, with units (i.e., specific gravity (sg) or parts per thousand (ppt)).

SECTION 6. TITLE AND SIGNATURE

Responsible officer's name and title (printed) and signature: Print name and title, include signature.

NATIONAL REQUIREMENT

<u>Country:</u>	Argentina
<u>Monitoring Authority:</u>	Argentine Maritime Authority. By the Argentine Coast Guard. The river pilot will inform the Coast Guard which action taken onboard.
<u>Ports affected:</u>	a) from Punta del Este b) latitude 36 14S, longitude 53 32 W to c) latitude 37 32S, longitude 55 23 W to d) Punta Rasa and finally back to a)
<u>Ships affected:</u>	Ships bound for Argentinian ports in the estuary of the River Plate and transiting the River Parana and its Ports.
<u>Implementation</u>	Mandatory.
<u>Date of start:</u>	2001
<u>Methods acceptable:</u>	Ships on voyages from other countries must discharge, exchange or treat their ballast water before arriving at the above mentioned zone, otherwise it must be held onboard until the vessel is clear of the zone..
<u>Unwanted aquatic organisms or pathogens:</u>	Not specified.
<u>Uptake control measures:</u>	Not specified.
<u>Sampling required:</u>	The Coast Guard is entitled to take samples of the contents of tank(s), pip(s), and pump(s) and to seal them in cases where the vessel has held ballast water onboard.
<u>Records required:</u>	Ships must carry a ballast water management plan, in accordance with IMO Resolution A.868(20). The following must be recorded in the log book: a) vessels latitude and longitude, date and time of the operation beginning. b) Total quantity m3 or mt of ballast water discharged/changed. c) Place of origin of ballast water discharged. d) Identification/capacity of ballast tanks involved. e) Quantity of unchanged ballast water held onboard and identification of tank(s). f) Vessels latitude and longitude and date/time when the operation was completed. g) The method used for changing ballast water (i.e. total emptying and refill, continuous flow, overflow, other recommended by IMO) h) Ballast water changed must have a salinity of at least 30 mg/cm3 –lower salinity content is subject to sanction.
<u>Procedures if en route management is not possible:</u>	Not specified.
<u>Procedure if ballast water found to be unacceptable after sampling:</u>	subject to sanction
<u>For further information refer to:</u>	Argentine Maritime Authority approved Order No. 7-98, entitled “Prevention of pollution by aquatic organisms in the ballast water of ships bound for Argentine ports in the estuary of the River Plate”.

Ships should seek the latest information from their agents prior to arrival.

REGIONAL OR SINGLE PORT REQUIREMENT

Region or port: **State of California, USA,**

Monitoring Authority: California State Lands Commission

Ports Affected: All ports in the State of California (but see Port of Oakland for further legislation, [page \[...\]](#))

Ships Affected: All ships carrying ballast and arriving from outside the US exclusive economic zone (EEZ), except:

- Crude oil tankers engaged in US coastwise trade.
- Passenger ships equipped with systems that can kill aquatic species in ballast water, providing that the State Lands Commission has determined that the system is at least as effective as ballast water exchange, and that the system is operated as it was designed to be.

Implementation: Mandatory. A ship will be deemed to be in compliance if it fulfils the USCG regulations and IN ADDITION regards ballast water exchange in mid-ocean as mandatory.

Date of start: 1 January 2000. A ship will be charged a ballast water fee, once for each applicable voyage from outside the United States EEZ.

Methods acceptable:

- Ballast water exchange at sea, outside the EEZ, from an area not less than 200 nautical miles from any shore, and in waters more than 2,000 meters deep, before entering waters of the state.
- Environmentally sound processes approved by the Water Board.
- Retain the ballast water on board.
- Discharge the ballast water to an approved reception facility.

Unwanted aquatic organisms or pathogens: Not defined

Uptake control measures:

Minimise or avoid uptake in areas known to have infestations or populations of harmful organisms or pathogens, near sewage outfalls or dredging operations, where tidal flushing is known to be poor or when a tidal stream is known to be more turbid, in darkness when bottom dwelling organisms are known to rise in the water column, or where propellers may stir up sediment.

Sampling Required:

The California State Lands Commission may take samples of ballast water and sediment, and take other action to assess the compliance with prescribed requirements by any ship.

Records and reports required:

As required by USCG regulations (see page [58]), but in addition, a copy of the ballast water reporting form must be submitted separately by mail, fax or Email, to California State Lands Commission, Marine facilities Division, 330 Golden Shores Suite 210, Long Beach, California 90802, USA; fax 001 562-499-6444; Email bwform@slc.ca.gov

Procedure if en route management is not possible:

1. Retain ballast water on board
2. Discharge ballast water to an approved reception facility
3. Use an alternative method of ballast water treatment. The method must be approved by the California State Lands Commission before the ship begins the voyage and must be at least as effective as ballast water exchange.
4. Under extraordinary conditions ballast water may be discharged within an area agreed to by the California State Lands Commission at the time of the request.

Note. Unless the safety of the ship or crew would have been put at risk, ships that have not performed en route management may be required to leave the waters of the state to exchange, treat or manage the ballast water.

Procedure if ballast water found to be unacceptable after sampling: Not specified.

Further information: California Public Resources Code, Chapter 36. "Ballast Water Management For Control Of Non-indigenous Species".

REGIONAL OR SINGLE PORT REQUIREMENT

Region or Port: **Port of Oakland**, California, USA

Monitoring Authority: Port of Oakland

Ports Affected: San Francisco Bay including open waters within the port area of the City of Oakland.

Ships Affected: All ships calling at existing and future port terminal facilities.

Implementation: Mandatory reporting from 1 August 1999, mandatory ballast water management from 1 August 2000.

Date of Start: 1 August 1999

Methods acceptable:

- Ocean ballast water exchange occurring at least 200 miles offshore and outside the United States EEZ.
- An approved alternative treatment method (currently no methods have been approved)
- Proven compliance with the uptake control measures specified in sections 9.1.1 and 9.1.2 of the Annex to IMO Resolution A.868(20).

Note that ballast water originating from within 200 miles west of the coast of North America and between the southern tip of Baja California and the northern tip of Alaska does not require treatment, and the reporting form shown on page (..) is to be used.

Unwanted aquatic organisms or pathogens: Not defined

Uptake control measures: As listed in IMO resolution A.868(20).

Sampling required: In addition to any sampling required by the USCG compliance programme, sampling by Port of Oakland authorities will be required if no ballast water reporting form is filed with the Oakland Port Wharfinger.

Records and reports required:

Ships with ballast tanks and arriving from outside the United States or Canada EEZ must comply with USCG regulations (see page [58]) and, in addition, before or during each call, provide a separate copy of the US Coast Guard ballast water reporting form to the Chief Wharfinger by fax. (001-510-839-6899) , by Email, (dadams@gw.portoakland.com) or mail to 530 Water Street, Oakland, CA 94607, USA. If Oakland is not the first port in the USA, then a copy of the form submitted at the first port is required. Additionally, ships with ballast tanks and arriving from ports on the coast of North America between the southern tip of Baja California and the northern tip of Alaska, or with ballast water that was taken on board within 200 miles of the coast should use the Coastal Ballast Water Reporting Form. For ships able to use the Internet, this second form can be completed and sent on-line using <http://www.portoakland.com>.

Before 31 December of each year, operators or owners of ships using the port facilities must provide the port with the ships' current ballast water management policy or policies.

Procedure if en route management is not possible:

Unless due to stress of weather, ship stability or hull stress concerns, no ballast water can be discharged in waters of the Port of Oakland.

Procedure if ballast water found to be unacceptable after sampling: Ballast water may not be discharged.

For further information:

Contact Mr. Gary Hallin, manager, customer services, Port of Oakland. Telephone 001-510-272-1305, fax 001-510-839-6899, Email ghallin@gw.portoakland.com.

REGIONAL OR SINGLE PORT REQUIREMENT

Region or Port: **Orkney Islands**, United Kingdom

Monitoring Authority: Orkney Islands Council

Ports affected: Scapa Flow, 58°50'23"N; 03°06'25"W.

Ships affected: All ships wishing to discharge ballast at Flotta Terminal.

Exemptions - Liquefied gas carrying tankers.

Implementation: Mandatory application.

Date of start: Prior to 1998

Methods acceptable: Discharge to shore reception facilities. Ballast water treatment plant has capacity to receive 40,000 barrels per hour.

Unwanted aquatic organisms or pathogens: Not defined.

Uptake control measures: None specified.

Sampling required: None

Records required: Not specified

Procedures if en route management is not possible:
Not applicable

Procedure if ballast water found to be unacceptable after sampling:
Not applicable

For further information refer to: Flotta Terminal Port Information Book, issued by Elf Exploration UK plc.

Note: Ballast from liquefied gas carrying tankers may be discharged into Scapa Flow if it has been taken on board within 24 hours, and at least 12 miles from shore. The master must provide the Harbour Authority with signed advice stating date, time and positions between which ballasting operations were carried out, quantity of ballast and tanks in which it is contained. Ballast samples will be taken by authorities to assess suitability for discharge.

REGIONAL OR SINGLE PORT REQUIREMENT

Region or Port: **Vancouver, Canada.**

Monitoring Authority: Vancouver Port Authority.

Ports affected: Vancouver, Nanaimo and Fraser River, British Columbia, Canada.

Ships affected: All ships destined to arrive at above ports in ballast condition.

Implementation: In addition to mandatory reporting requirements of Transport Canada (see p.[54]), ballast water management procedures are mandatory.

Exemptions:

- ships wishing to discharge less than 1000 metric tonnes;
- Ships arriving from West Coast of USA (North of Cape Mendocino), Canada and Alaska if the ballast water to be discharged originated from these waters;
- stress of weather;
- stability or hull stress concerns.

Date of start: 1st January 1998.

Methods acceptable:

Ballast water exchange in mid ocean prior to entering Canadian waters.

Unwanted aquatic organisms or pathogens: Nothing additional to Canadian controls.

Uptake control measures: Nothing additional to Canadian controls.

Sampling required: Nothing additional to Canadian controls.

Reports and records required: Harbourmaster representative will require to see one of the following: an entry (in English) in the logbook, an abstract of the logbook entry, or other formal record (company or administration). It must include position of exchange (latitude and longitude), place where original ballast was taken on, amount of ballast on board, ballast tanks which have had water exchanged; details if ballast water management was not performed (stress of weather, stability or hull stress concerns).

The record can be sent to the relevant harbourmaster's office at: Vancouver (001 604 665 9099), Nanaimo (001 250 753 4899) or Fraser River (001 604 524 1127), or passed to the harbourmaster's patrol staff after arrival.

After implementation of national requirements (see "Canada"), this need will be met by a copy of the ballast water reporting form that must be sent to Western Canada VTS (WESTREG)

Procedures if en route management is not possible:

No ballast water to be discharged into harbour until samples have been taken and analysed by harbourmaster representative.

Procedure if ballast water found to be unacceptable after sampling:

Retention on board, or departure from port and exchange of ballast in outgoing current of the north side of the Strait of Juan de Fuca, west of Race Rocks.

For further information refer to: Vancouver Port Authority announcement, dated 10th February 1997. This will be superceded by the implementation of Canadian Ballast Water Guidelines, Annex II, in 2000. Contact the Harbour Master by telephone (001 604 665 9086), facsimile (001 604 665 9099) or E-mail (harbour-master@portvancouver.com).

REPORT FROM THE 46th SESSION OF THE MARINE ENVIRONMENTAL PROTECTION COMMITTEE

Agenda item 3: Harmful Aquatic Organisms in Ballast Water

Some progress was made on a separate convention for the prevention of pollution from by harmful aquatic organisms in ballast water during MEPC46, but a significant amount of substance need be introduced in order to fulfil the intention of a Diplomatic Conference to adopt the convention in 2003.

The discussions were based on the previously agreed “two-tier” approach and on the re- structured proposal in an inter-session paper submitted by the United States.

At MEPC46 emphasis was put on finalising tier 1 requirements, i.e. mandatory requirements that would apply to all ships, such as mandatory requirements for a Ballast Water and Sediments Management Plan, a Ballast Water Record Book and a requirement that new ships shall carry out ballast water and sediment management procedures to a given standard or range of standards. Existing ships would be required to carry out ballast water management procedures after a phase-in period, but these procedures may differ from those to be applied to new ships.

Lack of requirements under tier 1 and time constraints did not permit discussions on tier 2, i.e. special requirements set by port states that apply in certain areas and would include procedures and criteria for the designation of such areas and additional controls that may be applied to the discharge and/or uptake of ballast water. Accordingly, the text for tier 2 remains to be developed at MEPC47.

The following principles were agreed with respect to tier 1:

- As it was recognised that ballast water exchange (empty & re-fill/flow-through/ dilution) is currently the only widely used technique for preventing the spread of unwanted aquatic organisms in ships’ ballast water, it will be accepted as one of the options for compliance with the tier 1 requirements of the convention. I.e. ballast water exchange will be accepted for both new and existing ships
- However, due to the clear limitation in terms of uncertain biological efficiency and ship safety concerns, it was agreed that ballast water exchange is an interim solution and that the convention should encourage the adoption of new, efficient and effective treatment techniques as they become available.
- As it was found difficult to develop one standard covering both ballast water exchange methods and new ballast water treatment techniques, it was agreed in principle that the convention is to contain two standards; one standard for ballast water exchange methods and one standard for new ballast water treatment methods (i.e. filtering, U/V, heat treatment, chemicals etc.).
- It was agreed in principle that the standard for ballast water exchange methods should be based on volumetric exchange efficiency. The ballast water exchange standard would distinguish between new and existing ships. In the development of the standard extracts from existing Guidelines in Resolution A.868(29) and other available documents will be considered.
- For new ships applying ballast water exchange methods it was indicated a volumetric exchange efficiency of 95%, to be documented through calculations or testing. Procedures for obtaining such efficiency are to be provided in the management plan. Further, new ships will be subject to design requirements (paper to be developed by UK and Australia for MEPC47) aiming at enhancing ballast water exchange efficiency (structural and piping arrangements and safety measures).
- It was briefly indicated that new and existing ship’s performing a 95% empty and refill of ballast tanks could be considered to comply with the requirement without calculations or testing.
- Existing ships applying the flow-through or dilution method were considered to comply without calculations or testing if they pumped through the volume of each ballast tank 3 times.
- In principle it was agreed that a standard for new Ballast water treatment techniques would be based on the outcome of the Globallast Workshop held in London 28th-30th March 2001. It was agreed that the standard should be a performance standard suitable for type approval and that the requirement to the ship should be simply to operate type approved equipment.
- Unlike the ballast water exchange standard, the ballast water treatment standard would not distinguish between new and existing ships.
- The majority of the delegates favoured that the standard should require that new treatment techniques should be capable of at least 95% removal/kill/inactivation of a representative species from each of five taxonomic groups in

ballast water to be discharged overboard relative to intake for a defined set of standard biological, physical and chemical conditions.

- The MEPC agreed to establish a Correspondence Group to work on developing a Ballast Water Treatment (BWT) Standard that could ultimately be used to assess the validity of other treatment options.

Agenda item 5 –Harmful effects of the use of anti-fouling paints for ships (TBT):

A Drafting Group continued the work on finalizing the draft text for the Convention for the forthcoming diplomatic conference in October 2001. IMO consider this subject to be of utmost importance and a whole day was spent on this in plenary.

The proposed text implies the following:

- As of 1 January 2003 ships and offshore units shall not apply or re-apply anti-fouling systems containing organic compounds acting as biocides (TBT).
- As of 1 January 2008 ships and offshore units (except offshore units constructed prior to 1 January 2003 and that have not been in dry-dock after same) shall not bear anti-fouling systems containing TBT on their hulls or external parts or surfaces.
- It has not been decided whether the latter means that TBT anti-fouling need be removed by sand-blasting or equivalent, or whether applying a special sealer coating that isolates the existing TBT anti-fouling system can be accepted.
- Ships above 400 grt shall after 1 January 2008 hold a certificate confirming compliance with the above. The certificate is subject to endorsements in connection with re-application of anti-fouling systems.
- Guidelines for surveys will be developed closer to entry into force date.

Agenda item 7: Recycling of ships

Based on the report of the correspondence group, its re-establishment was agreed and the formation of a WG at MEPC 47 is to be considered.

It was agreed the Correspondence Group should now work on the following issues, with a view to submitting a report to the next session in 2002:

- Identify all stakeholders and their perceived roles during the life-cycle of a ship;
- Identify and elaborate on the perceived role of IMO in ship recycling;
- Identify the existing international, national and additional industry and/or other relevant standards/guidelines, possibly applicable to ship recycling within the perceived role of IMO;
- Recommend possible courses of action for further consideration by the Committee, and to identify the pros and cons associated with each option.

Agenda item 10: Prevention of air pollution from ships

MEPC reviewed submission relating to greenhouse gas emissions from ships and agreed to establish a Working Group at MEPC47 to:

- Evaluate proposals for greenhouse gas emissions reduction contained in the IMO Study on Greenhouse Gas Emissions from Ships;
- Collate and evaluate information submitted by Members;
- Draw up a work plan; and prepare materials for consideration in developing an IMO strategy for greenhouse gas reduction.

Agenda item 8: Interpretation and amendments of MARPOL 73/78 and related codes:

The Committee agreed an MEPC circular on information from Contracting States to MARPOL Annex IV (Prevention of pollution by sewage from ships) to IMO of regulations on discharge of sewage in waters under their jurisdiction and available reception facilities for sewage in their ports. The aim of the Circular is to request States to provide the information required, in order to facilitate the implementation of MARPOL Annex IV when it enters into force.

Annex IV of MARPOL has not yet received enough ratification to enter into force (It has been ratified by 79 States representing 43.44 percent of world shipping tonnage, as at 31 March 2001 and needs 50 percent of world tonnage to enter into force). To alleviate the perceived problems with ratification of Annex IV, the Marine Environment Protection Committee (MEPC) reviewed the Annex and in March 2000, at its 44th session, approved a revised and updated Annex IV. However, the revised Annex IV cannot be adopted until the existing Annex IV enters into force.