



DROMON
CLASS

Ballast Water Management Convention /

Implementation requirements

September 2016

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Background information /

Since the introduction of steel-hulled vessels around 120 years ago, water has been used as ballast to stabilize vessels at sea. Ballast water is pumped in to maintain safe operating conditions throughout a voyage. This practice reduces stress on the hull, provides transverse stability, improves propulsion and manoeuvrability, and compensates for weight changes in various cargo load levels and due to fuel and water consumption.

While ballast water is essential for safe and efficient modern shipping operations, it may pose serious ecological, economic and health problems due to the multitude of marine species carried in ships' ballast water. These include bacteria, microbes, small invertebrates, eggs, cysts and larvae of various species. The transferred species may survive to establish a reproductive population in the host environment, becoming invasive, out-competing native species and multiplying into pest proportions.

Scientists first recognized the signs of an alien species introduction after a mass occurrence of the Asian phytoplankton algae *Odontella* (*Biddulphia sinensis*) in the North Sea in 1903. But it was not until the 1970s that the scientific community began reviewing the problem in detail. In the late 1980s, Canada and Australia were among countries experiencing particular problems with invasive species, and they brought their concerns to the attention of IMO's Marine Environment Protection Committee (MEPC).

The problem of invasive species in ships' ballast water is largely due to the expanded trade and traffic volume over the last few decades and, since the volumes of seaborne trade continue to increase, the problem may not yet have reached its peak yet. The effects in many areas of the world have been devastating. Quantitative data show that the rate of bio-invasions is continuing to increase at an alarming rate and new areas are being invaded all the time.

The spread of invasive species is now recognized as one of the greatest threats to the ecological and the economic wellbeing of the planet. These species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Direct and indirect health effects are becoming increasingly serious and the damage to the environment is often irreversible.

For example, in Caspian Sea, jelly fish *Cyanea Mnemiopsis* (V.P. IVANOV, 2016) are contributing to the collapse of entire commercial fisheries. In Europe, armoured invaders are rampaging up rivers and threatening local fish stocks. In the North Pacific Sea star *Asterias amurensis* which was introduced to southern Australia threatening stocks of shellfish species such as oysters and scallops. The numbers of its population are blooming and it is believed that one river discharge in Tasmania has reached total 30 million individuals, which is greater than any recorded in its native habitats and throughout the world's oceans, huge blooms of toxic algae are contaminating shellfish, causing thousands of deaths.

The Convention & Guidelines /

After more than 14 years of complex negotiations between IMO Member States, the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted by consensus at a Diplomatic Conference held at IMO Headquarters in London on 13 February 2004. In his opening address to the Conference the Secretary-General of IMO stated that the new Convention will represent a significant step towards protecting the marine environment for this and future generations. "Our duty to our children and their children cannot be over-stated. I am sure we would all wish them to inherit a world with clean, productive, safe and secure seas – and the outcome of this Conference, by staving off an increasingly serious threat, will be essential to ensuring this is so".

The Convention requires all ships to implement a ballast water management Plan. All ships will have to carry a Ballast Water Record Book and will be required to carry out ballast water management procedures to a given standard. Parties to the Convention are given the option to take additional measures which are subject to criteria set out in the Convention and to IMO guidelines.

Several articles and regulations of the BWM Convention refer to guidelines to be developed by the Organization and Conference resolution 1 invited IMO to develop these guidelines as a matter of urgency and adopt them as soon as practicable and, in any case, before the entry into force of the Convention, with a view to facilitate global and uniform implementation of the instrument.

The MEPC, at its fifty-first session in April 2004, approved a programme for the development of guidelines and procedures for uniform implementation of the BWM Convention, listed in Conference resolution 1, including additional guidance required but not listed in the resolution. The programme was further expanded at the fifty-third session of the MEPC in July 2005 to develop and adopt 14 sets of Guidelines, the last one being adopted by resolution MEPC.173(58) in October 2008. The guidelines and other relevant documents can be found Table 1 below.

Guideline / Relevant Documents	IMO Resolution
Guidelines for sediment reception facilities (G1)	MEPC.152(55)
Guidelines for ballast water sampling (G2)	MEPC.173(58)
Guidelines for ballast water management equivalent compliance (G3)	MEPC.123(53)
Guidelines for ballast water management and development of ballast water management plans (G4)	MEPC.127(53)
Guidelines for ballast water reception facilities (G5)	MEPC.153(55)
Guidelines for ballast water exchange (G6)	MEPC.124(53)
Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7)	MEPC.162(56)
Guidelines for approval of ballast water management systems (G8)	MEPC.174(58)
Procedure for approval of ballast water management systems that make use of Active Substances (G9)	MEPC.169(57)
Guidelines for approval and oversight of prototype ballast water treatment technology programmes (G10)	MEPC.140(54)
Guidelines for ballast water exchange design and construction standards (G11)	MEPC.149(55)
Guidelines on design and construction to facilitate sediment control on ships (G12)	MEPC.209(63)

Guideline / Relevant Documents	IMO Resolution
Guidelines for additional measures regarding ballast water management including emergency situations (G13)	MEPC.161(56)
Guidelines on designation of areas for ballast water exchange (G14)	MEPC.151(55)
Guidelines for ballast water exchange in the Antarctic treaty area	MEPC.163(56)
Guidelines for port State control under the BWM Convention	MEPC.252(67)

Table 1 – List of guidelines and other documents adopted by IMO



Entry into force /

IMO has confirmed that the Convention will enter into force on September 08, 2017 as the 35 per cent of the world merchant shipping tonnage has been reached by the 52 Contracting States.

The list of the 52 Contracting States can be found herewith below.

Contracting States		Date of deposit of instrument	Date of entry into force
1	Albania (accession)	15 January 2009	8 September 2017
2	Antigua and Barbuda	19 December 2008	8 September 2017
3	Barbados (accession)	11 May 2007	8 September 2017
4	Belgium (accession)	7 March 2016	8 September 2017
5	Brazil (ratification)	14 April 2010	8 September 2017
6	Canada (accession)	8 April 2010	8 September 2017
7	Congo (accession)	19 May 2014	8 September 2017
8	Cook Islands (accession)	2 February 2010	8 September 2017
9	Croatia (accession)	29 June 2010	8 September 2017
10	Denmark (accession) ¹	11 September 2012	8 September 2017
11	Egypt (accession)	18 May 2007	8 September 2017
12	Fiji (accession)	8 March 2016	8 September 2017
13	Finland (acceptance)	8 September 2016	8 September 2017
14	France (accession)	24 September 2008	8 September 2017
15	Germany (accession)	20 June 2013	8 September 2017
16	Georgia (accession)	12 January 2015	8 September 2017
17	Ghana (accession)	26 November 2015	8 September 2017
18	Indonesia (accession)	24 November 2015	8 September 2017
19	Iran (accession)	6 April 2011	8 September 2017
20	Japan (accession)	10 October 2014	8 September 2017
21	Jordan (accession)	9 September 2014	8 September 2017
22	Kenya (accession)	14 January 2008	8 September 2017
23	Kiribati (accession)	5 February 2007	8 September 2017
24	Lebanon (accession)	15 December 2011	8 September 2017
25	Liberia (accession)	18 September 2008	8 September 2017
26	Malaysia (accession)	27 September 2010	8 September 2017
27	Maldives (ratification)	22 June 2005	8 September 2017
28	Marshall Islands (accession)	26 November 2009	8 September 2017
29	Mexico (accession)	18 March 2008	8 September 2017
30	Mongolia (accession)	28 September 2011	8 September 2017
31	Montenegro (accession)	29 November 2011	8 September 2017
32	Morocco (accession)	23 November 2015	8 September 2017
33	Netherlands (approval) ²	10 May 2010	8 September 2017
34	Nigeria (accession)	13 October 2005	8 September 2017
35	Niue (accession)	18 May 2012	8 September 2017
36	Norway (accession)	29 March 2007	8 September 2017
37	Palau (accession)	28 September 2011	8 September 2017
38	Peru (accession)	10 June 2016	8 September 2017
39	Republic of Korea (accession)	10 December 2009	8 September 2017
40	Russian Federation (accession)	24 May 2012	8 September 2017
41	Saint Kitts and Nevis	30 August 2005	8 September 2017
42	Saint Lucia (accession)	26 May 2016	8 September 2017
43	Sierra Leone (accession)	21 November 2007	8 September 2017
44	South Africa (accession)	15 April 2008	8 September 2017
45	Spain (ratification)	14 September 2005	8 September 2017

¹ Also applies to the Faroes.

² Also applies to Bonaire, Saint Eustatius and Saba.

Contracting States		Date of deposit of instrument	Date of entry into force
46	Sweden (accession)	24 November 2009	8 September 2017
47	Switzerland (accession)	24 September 2013	8 September 2017
48	Syrian Arab Republic	2 September 2005	8 September 2017
49	Tonga (accession)	16 April 2014	8 September 2017
50	Turkey (accession)	14 October 2014	8 September 2017
51	Trinidad and Tobago	3 January 2012	8 September 2017
52	Tuvalu (accession)	2 December 2005	8 September 2017

Table 2 - List of countries that have ratified the BWM Convention as per 08/09/2016

The list of 52 Contracting States to the Convention shows their individual gross tonnages as at 8 September 2016, which combined total over 35.14 per cent of the gross tonnage of the world's merchant shipping.

Applicability /

The BWM Convention applies to ships entitled to fly the flag of a Party; and ships not entitled to fly the flag of a Party but which operate under the authority of a Party.

The BWM Convention will apply to ships flying the flag of a Party except:

- ships not designed or constructed to carry ballast water
- ships operating exclusively in waters under the jurisdiction of a Party, unless the party determines that the discharge of ballast water from such ships would impair or damage their environment
- warships, naval auxiliary or other ships owned or operated by a Party
- ships with permanent ballast water not subject to discharge.

Exemptions from the management of ballast water may be granted to ships on voyages between specified ports or operated exclusively between specified ports or locations when ballast water is not mixed other than between these ports or locations.

These exemptions shall be effective for a period not exceeding five years, subject to intermediate review. Moreover, BWM.2/Circ.32, dated 8 August 2011, specifies that provisions of the Convention are not applicable to the water in the hopper area of hopper dredgers.

With respect to ships of non-Parties to the BWM Convention (i.e. flag State Administrations that have not ratified the Convention), Parties shall apply the requirements of the BWM Convention as may be necessary to ensure that no more favourable treatment is given to such ships.

Existing ships will be required to install onboard an approved ballast water treatment system by the first IOPP renewal survey after the 8th of September 2017, whilst new ships (constructed after the entry into force date) will have to be compliant on delivery.

In the period between the entry into force date and the first IOPP renewal survey, existing ships will be required to perform the ballast water exchange according to the Convention's requirements.

Ballast Water Capacity in m ³	Construction Date	Compliance
All	Existing Ships	Compliance by first IOPP* renewal survey after 08 th September 2017
	Ships constructed after entry into force	Compliance on delivery

*The IOPP renewal survey refers to the renewal survey associated with the IOPP Certificate required under Annex I to MARPOL 73/78

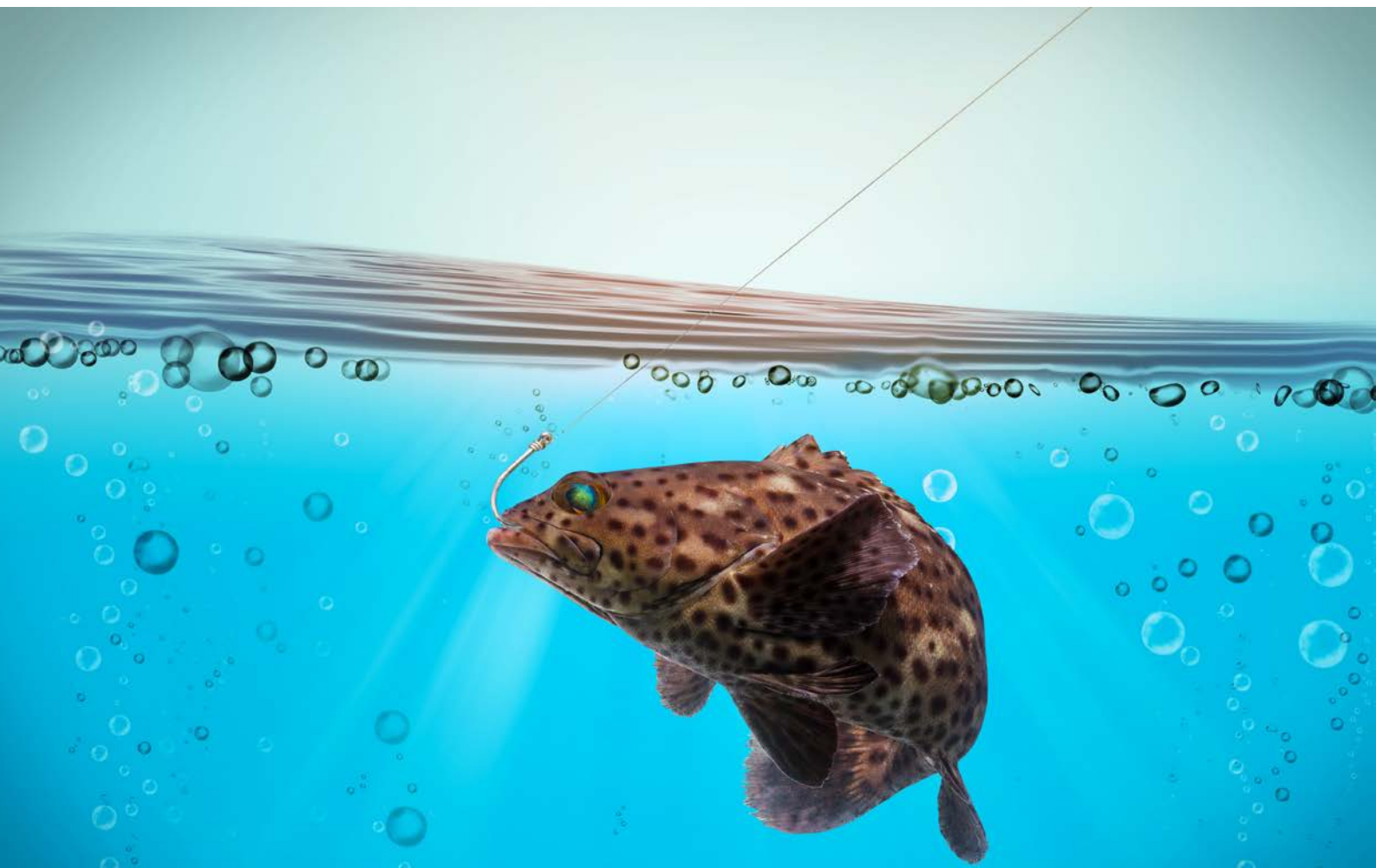
Ballast Water Management Methods /

As the Ballast Water Management Convention entry into force date has been defined as the September 8, 2017, all ships must comply with the regulation since there is a clause of no more favorable treatment.

All vessels must be installed with a Ballast Water Management System for the treatment of ballast water before discharged is made. As per the IMO Resolution A.1088(28) a schedule has been implemented for the installation of BWM treatment technology.

This states that existing ships must be installed with a BWM treatment technology at the “first IOPP renewal survey after the entry into force of the Convention”. Therefore **existing ships must be retrofitted with a BWM treatment technology at the first IOPP renewal survey after 8th of September 2017**. For ships constructed after the entry into force date, will have to be compliant on delivery.

For more detailed information regarding the ballast water treatment technologies refer to Annexes 1, 2 and 3 of this document.



By September 08, 2017 ships will require to manage their ballast water on every voyage by performing ballast water exchange or by treating it using an approved ballast water treatment system.

Ballast Water Standards /

There is a ballast water exchange standard and a ballast water performance standard as outlined herewith below.

Regulation D-1 Ballast Water Exchange Standard

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

Regulation D-2 Ballast Water Performance Standard

Ships conducting ballast water management shall discharge less than 10 viable organisms per cubic metre greater than or equal to 50 micrometres in minimum dimension and less than 10 viable organisms per millilitre less than 50 micrometres in minimum dimension and greater than or equal to 10 micrometres in minimum dimension; and discharge of the indicator microbes shall not exceed the specified concentrations. The indicator microbes, as a human health standard, include, but are not be limited to the following:

Indicator microbes	Discharge limitation
Toxicogenic <i>Vibrio cholerae</i> (O1 and O139)	< 1 colony-forming unit (cfu) per 100 ml
<i>Escherichia coli</i>	< 250 cfu per 100 ml
Intestinal Enterococci	< 100 cfu per 100 ml

Regulation D-3 Approval requirements for Ballast Water Management systems provides that Ballast Water Management systems must be approved by the Administration in accordance with IMO Guidelines (G8 Guidelines for the approval of Ballast Water Management Systems). These include systems which make use of chemicals or biocides; make use of organisms or biological mechanisms; or which alter the chemical or physical characteristics of the ballast water.

To reinforce the robustness of the Type Approval requirements of the G8 Guidelines, the MEPC has approved guidance on interpretation of the G8 Guidelines for Administrations on the procedure for evaluating an application for Type approval of a BWMS. The latest guidance is contained in BWM.2/Circ.43.

To improve the transparency of the Type Approval (TA) documentation, the MEPC has approved Resolution MEPC.228(65) (which supersedes Resolution MEPC.175(58)) which lists the information to report to the Organization when approving a ballast water management system in accordance with the Guidelines for approval of ballast water management systems (G8).

BWM Systems /

Regulation D-3 of the BWM Convention requires that ballast water management systems used, to comply with the Convention, must be approved by the Administration taking into account the Guidelines for approval of ballast water management systems (G8). In order to be type-approved by an Administration, ballast water management systems need to be tested in a land-based facility and on board ships to prove that they meet the performance standard contained in regulation D-2 of the BWM Convention. Guidelines (G8) provide the technical specifications and the approval and certification procedures to be used by the Administration when granting Type Approval. Successful fulfilment of the provisions contained in Guidelines (G8) should lead to the issuance of a Type Approval Certificate, which allows a ballast water management system to be used on board ship.

Regulation D-3 also requires that ballast water management systems which make use of Active Substances, to comply with the Convention, shall be approved by IMO in accordance with the "Procedure for approval of ballast water management systems that make use of Active Substances (G9)". Procedure (G9) consists of a two-tier process – to ensure that the ballast water management system does not pose unreasonable risk to the environment, human health, property or resources.

The decision on whether a ballast water management system makes use of Active Substances or not remains the prerogative of the Administration, which, ultimately, decides if it needs to make a proposal for approval in accordance to the Procedure (G9) or not.

Bearing in mind the complexity and the significant volume of documentation needed to support a proposal for approval, MEPC 53 agreed to establish a technical group to review these proposals along with any additional data and report to the Organization whether the proposals have demonstrated a potential for unreasonable risk environment, human health, property or resources in accordance with the criteria specified in Procedure (G9). MEPC 53 had also agreed that a technical group established under the auspices of GESAMP and financed through a fee scheme paid by the manufactures of the systems could best serve the interest of the shipping industry and mandated the group to develop the necessary methodologies and information requirements in accordance with the Procedure (G9).

The IMO is requested to record the approvals of ballast water management systems and circulate their list once a year. Resolution MEPC.228(65), on the other side, requests the Administrations approving a ballast water management system in accordance with the Guidelines for approval of ballast water management systems (G8), to provide relevant information regarding the type approval certificate to the Organization for circulation to the interested parties.

For the current list of Ballast Water Management Systems, which received Type Approval Certification, Basic and Final Approval scan here



Installation of BWM Systems /

General requirements

All valves, piping fittings and flanges are to comply with the relevant requirements of Section 4, Chapter 9 of DBS Rules and Regulations for sea-going ships. In addition, special consideration can be given to the material used for this service with the agreement of DBS.

The BWMS is to be provided with by-pass or override arrangement to effectively isolate it from any essential ship system to which it is connected.

The BWMS is to be operated at a flow rate which does not exceed the Treatment Rated Capacity (hereinafter referred to as "TRC") specified in the Type Approval Certificate (TAC) issued by the Flag Administration.

Where a vacuum may occur in the ballast line due to the height difference, a suitable protection means is to be provided, e.g. P/V valves or breather valves, and their outlets are to be led to safe area on open deck.

Electric and electronic components are not to be installed in a hazardous area unless they are of certified safe type for use in the area. Cable penetrations of decks and bulkheads are to be sealed when a pressure difference between the areas is to be maintained.

Where the operating principle of the BWMS involves the generation of a dangerous gas, the following requirements are to be satisfied:

- Gas detection equipment is to be fitted in the spaces where dangerous gas could be present, and an audible and visual alarm is to be activated both locally and at the BWMS control station in the event of leakage. The gas detection device is to be designed and tested in accordance with IEC 60079-29-1 or recognized standards acceptable by DBS.
- The ventilation line of a space where dangerous gas could be present is to be led to a safe area on open deck.
- The arrangements used for gas relieving, i.e. degas equipment or equivalent, are to be provided with monitoring measures with independent shutdown. The open end of the gas relieving device is to be led to a safe area on open deck.

Ballast piping, including sampling lines from ballast tanks considered as hazardous areas, is not to be led to an enclosed space regarded as a safe area, without any appropriate measures, except ships carrying liquefied gases in bulk. However, a sampling point for checking the performance of BWMS, for ballast water containing dangerous gas, may be located in a safe area provided the following requirements are fulfilled:

- The sampling facility is to be located within a gas tight enclosure (referred to as a 'cabinet'), and the following (i) through (iii) are to be complied:
 - i. In the cabinet, a stop valve is to be installed in each sample pipe.
 - ii. Gas detection equipment is to be installed in the cabinet and the valves specified in (i) above are

to be automatically closed upon activation of the gas detection equipment.

iii. Audible and visual alarm signals are to be activated both locally and at the BWMS control station when the concentration of explosive gases reaches a pre-set value, which should not be higher than 30% of the lower flammable limit (LFL) of the concerned product.

- The measuring system is to be installed as close to the bulkhead as possible, and the length of measuring pipe in any safe area is to be as short as possible.
- Stop valves are to be located in the safe area, in both the suction and return pipes close to the bulkhead penetrations. A warning plate stating "Keep valve closed when not performing measurements" is to be posted near the valves. Furthermore, in order to prevent backflow, a water seal or equivalent arrangement is to be installed on the hazardous area side of the return pipe.
- A safety valve is to be installed on the hazardous area side of each sampling pipe.

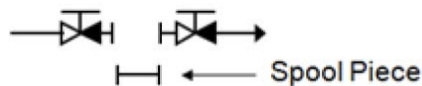
Additional requirements for tankers

Hazardous area classification is to be in accordance with IEC 60092-502.

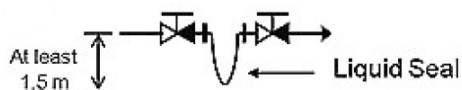
For tankers carrying flammable liquids having a flashpoint not exceeding 60°C or products listed in the IBC Code having a flashpoint not exceeding 60°C or cargoes heated to temperature above their flashpoint and cargoes heated to temperature within 15°C of their flashpoint. In general, two independent BWMS may be required – i.e. one for ballast tanks in hazardous areas and the other for ballast tanks in non-hazardous areas.

The interconnection of ballast piping between hazardous areas and in nonhazardous areas may be accepted if an appropriate isolation arrangement is applied. Means of appropriate isolation are as follows:

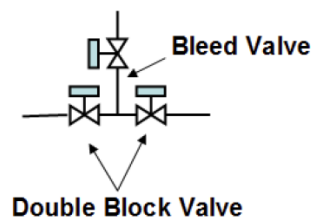
- Two screw down check valves in series with a spool piece, or



- Two screw down check valves in series with a liquid seal at least 1.5 m in depth, or

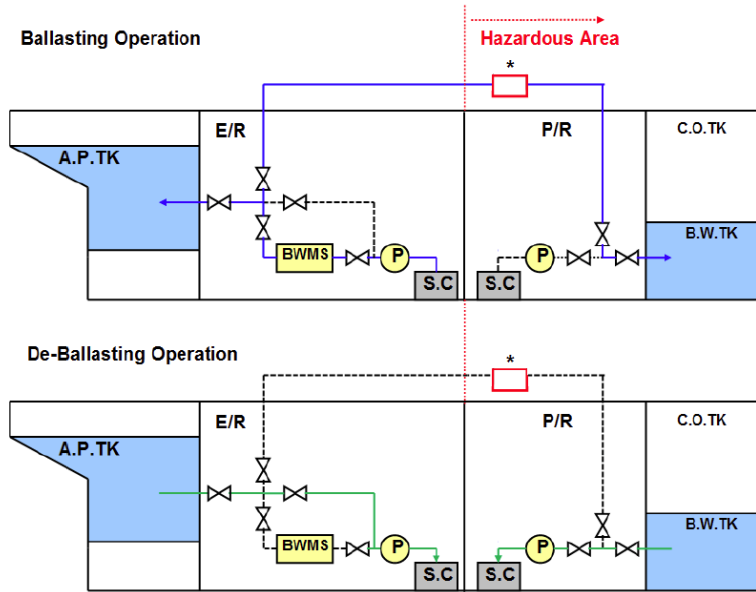


- Automatic double block and bleed valves

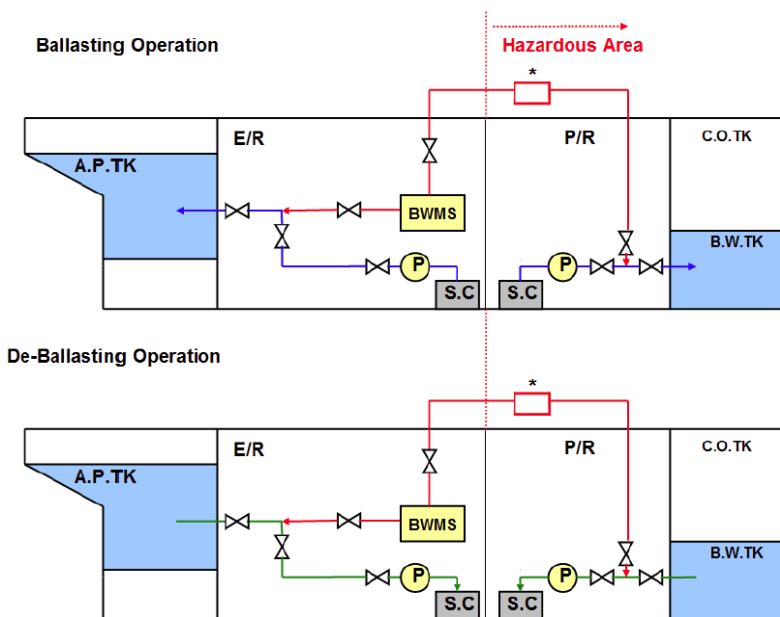


Examples of appropriate isolation arrangements are shown below:

- BWMS which does not require after-treatment



- BWMS which requires after-treatment (Injection type)



* Appropriate Isolation Means: Two (2) screw down check valves in series with a spool piece or a liquid seal, or automatic double block and bleed valves.

Isolation arrangements are to be fitted on the exposed deck in the hazardous area. Also, ballast water originating from a hazardous area is not to discharge into a non-hazardous area, except as given above.

Ventilation

BWMS not in hazardous areas:

- A BWMS that does not generate dangerous gas is to be located in an adequately ventilated area.
- A BWMS that generates dangerous gas is to be located in a space fitted with a mechanical ventilation system providing at least 6 air changes per hour or as specified by the BWMS manufacturer, whichever is greater.

BWMS in hazardous areas:

A BWMS, regardless of whether or not it generates dangerous gas, is to be located in a space fitted with mechanical ventilation complying with relevant requirements, e.g. IEC60092- 502, IBC Code, IGC Code, etc.

Special requirements

The length of pipe and the number of connections are to be minimized in piping systems containing dangerous gases/liquids in high concentration. The following requirements are also to be satisfied:

- Pipe joints are to be of welded type except for connections to shut off valves, double walled pipes or pipes in ducts equipped with mechanical exhaust ventilation. Alternatively it is to be demonstrated that risk of leakage is minimized and the formation of toxic or flammable atmosphere is prevented.
- Location of the piping system is to be away from heat sources and protected from mechanical damage.

For BWMS using chemical substances, handling procedures are to be in accordance with the Material Safety Data Sheet and BWM.2/Circ.20, and the following measures are to be taken as appropriate:

- The materials used for the chemical storage tanks, piping and fittings are to be resistant to such chemicals.
- Chemical storage tanks are to have sufficient strength and be constructed such that maintenance and inspection can be easily performed.
- Chemical storage tank air pipes are to be led to a safe area on open deck.
- An operation manual containing chemical injection procedures, alarm systems, measures in case of emergency, etc, is to be kept onboard.

Where the BWMS is installed in an independent compartment, the compartment is to be:

- Provided with fire integrity equivalent to other machinery spaces.
- Positioned outside of any combustible, corrosive, toxic, or hazardous areas unless otherwise specifically approved.

A risk assessment may be conducted to ensure that risks, including but not limited to those arising from the use of dangerous gas affecting persons on board, the environment, the structural strength or the integrity of the ship are addressed.

Automation

In case of any by-pass or override operation of BWMS, an audible and visual alarm is to be given and these events are to be automatically recorded in control equipment. The valves in the by-pass line which trigger the by-pass operation are to be remote-controllable by control equipment or fitted with open/close indicator for automatic detection of the by-pass event.



BWM Survey and Certification /

Survey and Certification

Every vessel above 400 GT is subject to survey and certification. Vessels below 400 GT (excluding floating platforms, FSUs and FPSOs) will be subject to national survey and certification requirements. By the 8th of September 2017 all ships to which the Convention applies will be required to carry on board an "International Ballast Water Management Certificate".

The survey and certification scheme under the BWM Convention is similar to other IMO Conventions and requires initial, annual/intermediate and renewal surveys.

On completion of an initial survey, an International Ballast Water Management Certificate will be issued for a vessel whose flag has ratified the BWM Convention. For vessels flying a flag that has not ratified the BWM Convention, an International Ballast Water Management Statement of Compliance will be issued. Both the Certificates and the Statements of Compliance will be valid for five years subject to annual/intermediate and renewal surveys.

Exemptions

Exemptions from the management of ballast water may be granted to ships on voyages between specified ports or operated exclusively between specified ports or locations when ballast water is not mixed other than between these ports or locations.

These exemptions shall be effective for a period not exceeding five years, subject to intermediate review. Moreover, BWM.2/Circ.32, dated 8 August 2011, specifies that provisions of the Convention are not applicable to the water in the hopper area of hopper dredgers.

All ships above 400 GT must possess an International Ballast Water Management Certificate

BWM Plan and Record Book /

Ballast Water Management (BWM) Plan

Ships are required to have on board and implement a Ballast Water Management (BWM) Plan approved by the Administration (Regulation B-1).

The BWM Plan is specific to each ship and includes a detailed description of the actions to be taken to implement the Ballast Water Management requirements and supplemental Ballast Water Management practices.

A BWM Plan must:

- assist the ship in complying with international regulations to minimize the risk of the transfer of harmful aquatic organisms and pathogens in ships' ballast water and associated sediments;
- identify the ship's Ballast Water Management Officer;
- consider ship safety elements, provide information to PSC officers on the ship's ballast handling system and confirm that ballast water management can be effectively planned;
- include training on BWM operational practices;
- be written in the working language of the ship. If this language is not English, French or Spanish a translation into one of these It is important to note that MEPC 63 agreed that whilst the Guidelines adopted after 2004 for the uniform implementation of the BWM Convention have effectively superseded the Guidelines adopted by resolution A.868(20), for practical reasons, the Ballast Water Management Plans, approved in accordance with resolution A.868(20), should remain valid until they require revision due to the installation of a ballast water management system.

By the 8th of September 2017 all ships to which the Convention applies will be required to carry on board a "Ballast Water Management Plan" approved by the Administration, detailing safety procedures and actions to be taken to implement the ballast water management requirements;

Standard Format for the Ballast Water Management Plan

Preamble

The ballast water management plan should contain the information required by Regulation B-1 of the Convention. For guidance in preparing the plan the following information is to be included. The plan should be specific to each ship.

Introduction

At the beginning of each plan, wording should be included to reflect the intent of the following text.

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

Convention) and the associated Guidelines.

2. The purpose of the Plan is to meet the requirements for the control and management of ship's ballast water and sediments in accordance with the Guidelines for Ballast Water Management and the Development of Ballast Water Management Plans resolution MEPC.127(53) (The Guidelines). It provides standard operational guidance for the planning and management of ships' ballast water and sediments and describes safe procedures to be followed.
3. This Plan has been approved by *[DBS or the Flag Administration]* <delete as appropriate> and no alteration or revision shall be made to any part of it without the prior approval of *[DBS or the Flag Administration]* <delete as appropriate>.
4. This Plan may be inspected on request by an authorized authority.

Note: The Plan is to be written in the working language of the crew, if the text is not in English, French, or Spanish, the plan is to include a translation into one of these languages.

Ship Particulars

At least the following details should be included:

Ships' name:

Flag:

Port of registry:

Gross Tonnage:

IMO number*:

Length (BP):

Beam:

International call sign:

Deepest ballast drafts (normal and heavy weather):

Total ballast capacity of the ship in cubic meters and other units if applicable to the ship:

A brief description of the main ballast water management method(s) used on the ship:

Identification (rank) of the appointed ballast water management officer:

Index

An index of sections should be included to reference the content of the Plan.

Purpose

Should contain a brief introduction for the ship's crew, explaining the need for ballast water management, and the importance of accurate record keeping.

Plans/Drawings of the Ballast System

Plans or drawings of the ballast system for example:

1. ballast tank arrangement;
2. ballast capacity plan;
3. a ballast water piping and pumping arrangement, including air pipes and sounding arrangements;
4. ballast water pump capacities;
5. the ballast water management system used onboard, with references to detailed operational and maintenance manuals held onboard;

6. installed ballast water treatment systems; and
7. a plan and profile of the ship, or a schematic drawing of the ballast arrangement.

Description of the Ballast System

A description of the ballast system.

Ballast Water Sampling Points

Lists and/or diagrams indicating the location of sampling and access points in pipelines and ballast water tanks. A note that sampling of ballast water is primarily a matter for the authorized authority, and there is unlikely to be any need for crew members to take samples except at the express request, and under the supervision, of the authorized authority.

Operation of the Ballast Water Management System

A detailed description of the operation of the Ballast Water Management System(s) used on board. Information on general ballast water management precautionary practices.

Safety Procedures for the ship and the crew

Details of specific safety aspects of the ballast water management system used.

Operational or safety restrictions

Details of specific operational or safety restrictions including those associated with the management system which affects the ship and or the crew including reference to procedures for safe tank entry.

Description of the method(s) used on board for ballast water management and sediment control

Details of the method(s) used on board for the management of ballast and for sediment control including step-by-step operational procedures.

Procedures for the disposal of sediments

Procedures for the disposal of sediments at sea and to shore.

Methods of communication

Details of the procedures for co-ordinating the discharge of ballast in waters of a coastal State.

Duties of the ballast water management officer

Outline of the duties of the designated officer.

Recording requirements

Details of the record-keeping requirements of the Convention.

Crew training and familiarization

Information on the provision of crew training and familiarization.

Exemptions

Details of any exemptions granted to the ship under Regulation A-4.

Ballast Water Record Book

Ships must have a Ballast Water Record Book (Regulation B-2) to record when ballast water is taken on board; circulated or treated for Ballast Water Management purposes; and discharged into the sea. It should also record when Ballast Water is discharged to a reception facility and accidental or other exceptional discharges of Ballast Water.

By the 8th of September 2017 all ships to which the Convention applies will be required to carry on board a "Ballast Water Record Book" for the recording of each operation concerning ballast water management.

Format of the Ballast Water Record Book can be found in Annex II of the BWM Convention.

Compliance Matrix /

Step 1 – Understand your responsibilities

- Review which method you must follow in order to comply with the BWMC
- Review the national requirements of Flag Administration
- Train personnel for the requirements of the BWMC

How can we help?

Dromon Academia Centre offers various training courses including a familiarization with the BWMC as well as BWM Inspectors course.

Step 2 – Review current ballast system and tanks on board your fleet

- Identify the ballast water tanks and the piping arrangements on board your ship
- Review and ensure compliance of ballast water tanks and piping arrangements with the requirements

How can we help?

Dromon Engineering Department can assist in reviewing the system on board and ensure compliance with Class and the Convention requirements.

Step 3 – Ballast Water Treatment System

- Select an appropriate and approved BWTS
- Identify any changes that require to be carried out on board for the installation of BWTS
- Establish an installation programme for the retrofit of the BWTS

How can we help?

Dromon Engineering Department can guide you in the selection of the appropriate system for your ship and guide you throughout the retrofitting process.

Step 4 – Training

- Train seafarers on board on the requirements of the BWM Convention
- Train seafarers on board on the use and maintenance of the BWTS

How can we help?

Dromon Audit Department can review your current procedures and ensure an appropriate training schedule as well as an effective maintenance programme are implemented in the existing Safety Management System of your ship.

Step 5 – Develop a Ballast Water Management Plan

- Develop the BWM Plan in accordance with the Convention and national requirements
- Submit the BWM Plan for review and approval

How can we help?

Dromon Engineering Department can review and approve your BWM Plan.

Step 6 – Survey and Certification

- Prepare the vessel for the initial survey

How can we help?

Dromon is authorized by various Flag Administrations to conduct BWM surveys and issue the applicable certificate. Our Survey Department can organize your survey and certification through our network of surveyors.

Annex 1 – List of ballast water management systems that make use of Active Substances
which received Basic Approval from IMO³

	Name of the system and proposing country	Name of manufacturer	Date of Basic Approval
1	Peraclean® Ocean (subsequently changed to SEDNA® Ballast Water Management System (Using Peraclean® Ocean)), Germany	Degussa GmbH, Germany	24 March 2006 (MEPC 54)
2	Electro-Clean (electrolytic disinfection) system (subsequently changed to Electro-Cleen™), Republic of Korea	Techcross Ltd. and Korea Ocean Research and Development Institute (KORDI)	24 March 2006 (MEPC 54)
3	Special Pipe Ballast Water Management System (combined with Ozone treatment), Japan (subsequently changed to FineBallast OZ (the Special Pipe Hybrid Ballast Water Management System combined with Ozone treatment version))	Japan Association of Marine Safety (JAMS)	13 October 2006 (MEPC 55)
4	EctoSys™ electrochemical system, Sweden (subsequently changed to the RWO ballast water management system)	Permascand AB, Sweden, subsequently acquired by RWO GmbH, Germany	13 October 2006 (MEPC 55)
5	PureBallast System, Sweden	Alfa Laval/Wallenius Water AB	13 July 2007 (MEPC 56)
6	NK Ballast Water Treatment System, Republic of Korea (subsequently changed to NK-O3 BlueBallast System (Ozone))	NK Company Ltd., Republic of Korea	13 July 2007 (MEPC 56)
7	Hitachi Ballast Water Purification System (ClearBallast), Japan	Hitachi, Ltd./Hitachi Plant technologies, Ltd.	4 April 2008 (MEPC 57)
8	Resource Ballast Technologies System, South Africa	Resource Ballast Technologies (Pty) Ltd.	4 April 2008 (MEPC 57)
9	GloEn-Patrol™ Ballast Water Management System, Republic of Korea	Panasia Co., Ltd.	4 April 2008 (MEPC 57)
10	OceanSaver® Ballast Water Management System, Norway	MetaFil AS (subsequently changed to OceanSaver AS)	4 April 2008 (MEPC 57)
11	TG Ballastcleaner and TG Environmentalguard System (subsequently changed to JFE Ballast Water Management System), Japan	The Toagosei Group (TG Corporation, Toagosei Co., Ltd. and Tsurumi Soda Co., Ltd.)	10 October 2008 (MEPC 58)
12	Greenship Sedinox Ballast Water Management System, the Netherlands	Greenship Ltd	10 October 2008 (MEPC 58)
13	Ecochlor® Ballast Water Treatment System, Germany	Ecochlor, Inc, Acton, the United States	10 October 2008 (MEPC 58)
14	Blue Ocean Shield Ballast Water Management System, China	China Ocean Shipping (Group) Company (COSCO)	17 July 2009 (MEPC 59)

³ More comprehensive information regarding the systems approved until October 2015 is available in document BWM.2/Circ.34/Rev.4.

	Name of the system and proposing country	Name of manufacturer	Date of Basic Approval
15	Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (EcoBallast), Republic of Korea	Hyundai Heavy Industries Co., Ltd., Republic of Korea	17 July 2009 (MEPC 59)
16	AquaTriComb™ Ballast Water Treatment System, Germany	Aquaworx ATC GmbH	17 July 2009 (MEPC 59)
17	SiCURE™ Ballast Water Management System, Germany	Siemens Water Technologies	26 March 2010 (MEPC 60)
18	Sunrui Ballast Water Management System (subsequently changed to BalClor Ballast Water Management System), China	Qingdao Sunrui Corrosion and Fouling Control Company	26 March 2010 (MEPC 60)
19	DESMI Ocean Guard Ballast Water Management System, Denmark	DESMI Ocean Guard A/S	26 March 2010 (MEPC 60)
20	Blue Ocean Guardian (BOG) Ballast Water Management System, (subsequently changed to "ARA Ballast" Ballast Water Management System), Republic of Korea	21st Century Shipbuilding Co., Ltd.	26 March 2010 (MEPC 60)
21	Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (HiBallast), Republic of Korea	Hyundai Heavy Industries Co., Ltd., Republic of Korea	26 March 2010 (MEPC 60)
22	Kwang San Co., Ltd. (KS) Ballast Water Management System "En-Ballast", Republic of Korea	Kwang San Co., Ltd.	26 March 2010 (MEPC 60)
23	OceanGuard™ Ballast Water Management System, Norway	Qingdao Headway Technology Co., Ltd.	26 March 2010 (MEPC 60)
24	Severn Trent DeNora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500), Germany	Severn Trent De Nora (STDN), LLC	26 March 2010 (MEPC 60)
25	Techwin Eco Co., Ltd. (TWECO) Ballast Water Management System (Purimar), Republic of Korea	Techwin Eco Co., Ltd.	1 October 2010 (MEPC 61)
26	AquaStar Ballast Water Management System, Republic of Korea (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM)	AQUA Eng. Co., Ltd.	1 October 2010 (MEPC 61)
27	Kuraray Ballast Water Management System, (subsequently changed to MICROFADE™ Ballast Water Management System), Japan	Kuraray Co., Ltd.	1 October 2010 (MEPC 61)
28	ERMA FIRST Ballast Water Management System (subsequently changed to ERMA FIRST BWTS), Greece	ERMA FIRST ESK Engineering Solutions S.A.	15 July 2011 (MEPC 62)
29	BlueSeas Ballast Water Management System, Singapore	Envirotech and Consultancy Pte. Ltd.	15 July 2011 (MEPC 62)
30	SKY-SYSTEM® with Peraclean® Ocean Ballast Water Management System, Japan	Katayama Chemical, Inc.	15 July 2011 (MEPC 62)

	Name of the system and proposing country	Name of manufacturer	Date of Basic Approval
31	JFE BallastAce that makes use of NeoChlor Marine® Ballast Water Management System, Japan	JFE Engineering Corporation	15 July 2011 (MEPC 62)
32	BallastMaster Ballast Water Management System, Germany	GEA Westfalia Separator Systems GmbH	15 July 2011 (MEPC 62)
33	BlueWorld Ballast Water Management System, Singapore	Envirotech and Consultancy Pte. Ltd.	15 July 2011 (MEPC 62)
34	Neo-Purimar™ Ballast Water Management System, Republic of Korea	Samsung Heavy Industries Co., Ltd.	15 July 2011 (MEPC 62)
35	"Smart Ballast" Ballast Water Management System, Republic of Korea	STX Metal Co., Ltd.	2 March 2012 (MEPC 63)
36	DMU -OH Ballast Water Management System, China	Dalian Maritime University	2 March 2012 (MEPC 63)
37	EcoGuardian™ Ballast Water Management System, Republic of Korea	Hanla IMS Co., Ltd.	2 March 2012 (MEPC 63)
38	KTM-Ballast Water Management System, Republic of Korea (subsequently changed to MARINOMATE™ Ballast Water Management System)	Korea Top Marine (KT Marine) Co., Ltd.	5 October 2012 (MEPC 64)
39	Hamworthy Aquarius™-EC BWMS, the Netherlands (subsequently changed to Aquarius™-EC BWMS)	Hamworthy Water Systems Ltd.	5 October 2012 (MEPC 64)
40	OceanDoctor Ballast Water Management System, China	Jiujiang Precision Measuring Technology Research Institute	5 October 2012 (MEPC 64)
41	HS-BALLAST Ballast Water Management System, Republic of Korea	HWASEUNG R&A Co., Ltd.	5 October 2012 (MEPC 64)
42	GloEn-Saver™ Ballast Water Management System, Republic of Korea	PANASIA Co., Ltd.	5 October 2012 (MEPC 64)
43	Van Oord Ballast Water Management System, the Netherlands	Van Oord B.V.	17 May 2013 (MEPC 65)
44	REDOX AS Ballast Water Management System, Norway	REDOX Maritime Technologies AS	17 May 2013 (MEPC 65)
45	BlueZone™ Ballast Water Management System, Republic of Korea	SUNBO INDUSTRIES Co., Ltd., DSEC Co., Ltd., and the Korean Institute of Machinery & Material (KIMM)	17 May 2013 (MEPC 65)
46	ECOLCELL BTs Ballast Water Management System, Italy	Azienda Chimica Genovese (ACG)	4 April 2014 (MEPC 66)
47	Ecomarine-EC Ballast Water Management System, Japan	Ecomarine Technology Research Association	4 April 2014 (MEPC 66)
48	ATPS-BLUE ₂₇₅ Ballast Water Management System, Japan	Panasonic Environmental Systems & Engineering Co., Ltd.	4 April 2014 (MEPC 66)
49	KURITA™ Ballast Water Management System, Japan	Kurita Water Industries Ltd.	4 April 2014 (MEPC 66)
50	ElysisGuard ballast water management system	KALF Engineering Pte. Ltd.	17 October 2014 (MEPC 67)

	Name of the system and proposing country	Name of manufacturer	Date of Basic Approval
51	NK-CI BlueBallast System	NK Company Ltd.	15 May 2015 (MEPC 68)
52	ECS-HYCHLOR™ System	TEHCROSS Inc.	15 May 2015 (MEPC 68)
53	ECS-HYCHEM™ System	TEHCROSS Inc.	15 May 2015 (MEPC 68)
54	ECS-HYBRID™ System	TEHCROSS Inc.	15 May 2015 (MEPC 68)
55	VARUNA Ballast Water Treatment System	Kadalneer Technologies Pte. Ltd.	15 May 2015 (MEPC 68)

Annex 2 - List of ballast water management systems that make use of Active Substances
which received Final Approval from IMO⁴

	Name of the system and proposing country	Name of manufacturer	Date of Final Approval
1	PureBallast System, Norway	Alfa Laval/Wallenius Water AB	13 July 2007 (MEPC 56)
2	SEDNA® Ballast Water Management System (Using Peraclean® Ocean), Germany	Degussa GmbH, Germany	4 April 2008 (MEPC 57)
3	Electro-Cleen™ System, Republic of Korea	Techcross Ltd. and Korea Ocean Research and Development Institute (KORDI)	10 October 2008 (MEPC 58)
4	OceanSaver® Ballast Water Management System, Norway	OceanSaver AS	10 October 2008 (MEPC 58)
5	RWO Ballast Water Management System (CleanBallast), Germany	RWO GmbH Marine Water Technology, Germany	17 July 2009 (MEPC 59)
6	NK-O3 BlueBallast System (Ozone), Republic of Korea	NK Company Ltd., Republic of Korea	17 July 2009 (MEPC 59)
7	Hitachi Ballast Water Purification System (ClearBallast), Japan	Hitachi, Ltd. /Hitachi Plant technologies, Ltd.	17 July 2009 (MEPC 59)
8	Greenship Sedinox Ballast Water Management System, the Netherlands	Greenship Ltd	17 July 2009 (MEPC 59)
9	GloEn-Patrol™ Ballast Water Management System, Republic of Korea	Panasia Co., Ltd.	26 March 2010 (MEPC 60)
10	Resource Ballast Technologies System, South Africa	Resource Ballast Technologies (Pty) Ltd.	26 March 2010 (MEPC 60)
11	JFE BallastAce® Ballast Water Management System, Japan	JFE Engineering Corporation	26 March 2010 (MEPC 60)
12	Hyundai Heavy Industries Co., Ltd. (HHI) Ballast Water Management System (EcoBallast), Republic of Korea	Hyundai Heavy Industries Co., Ltd., Republic of Korea	26 March 2010 (MEPC 60)
13	Special Pipe Hybrid Ballast Water Management System combined with Ozone treatment version (SP-Hybrid BWMS Ozone version), Japan	Mitsui Engineering & Shipbuilding Co., Ltd.	1 October 2010 (MEPC 61)
14	"ARA Ballast" Ballast Water Management System, Republic of Korea	21st Century Shipbuilding Co., Ltd.	1 October 2010 (MEPC 61)
15	BalClor Ballast Water Management System, China	Qingdao Sunrui Corrosion and Fouling Control Company	1 October 2010 (MEPC 61)
16	OceanGuard™ Ballast Water Management System, Norway	Qingdao Headway Technology Co., Ltd.	1 October 2010 (MEPC 61)
17	Ecochlor® Ballast Water Management System, Germany	Ecochlor Inc, Acton, the United States	1 October 2010 (MEPC 61)

⁴ More comprehensive information regarding the systems approved until October 2015 is available in document BWM.2/Circ.34/Rev.4.

	Name of the system and proposing country	Name of manufacturer	Date of Final Approval
18	Severn Trent De Nora BalPure® Ballast Water Management System (subsequently changed to BalPure® BP-500), Germany	Severn Trent De Nora (STDN), LLC	1 October 2010 (MEPC 61)
19	HiBallast Ballast Water Management System, Republic of Korea	Hyundai Heavy Industries Co., Ltd.	15 July 2011 (MEPC 62)
20	Purimar Ballast Water Management System, Republic of Korea	Samsung Heavy Industries Co., Ltd.	15 July 2011 (MEPC 62)
21	SiCURE™ Ballast Water Management System, Germany	Siemens Water Technologies	2 March 2012 (MEPC 63)
22	ERMA FIRST Ballast Water Management System (subsequently changed to ERMA FIRST BWTS), Greece	ERMA FIRST E.S.K. Engineering Solutions S.A.	2 March 2012 (MEPC 63)
23	MICROFADE™ Ballast Water Management System, Japan	Kuraray Co., Ltd.	2 March 2012 (MEPC 63)
24	AquaStar™ Ballast Water Management, Republic of Korea (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM)	AQUA Eng. Co.	2 March 2012 (MEPC 63)
25	Neo-Purimar™ Ballast Water Management System, Republic of Korea	Samsung Heavy Industries Co., Ltd. (SHI)	2 March 2012 (MEPC 63)
26	DESMI Ocean Guard BWMS, Denmark	DESMI Ocean Guard A/S	5 October 2012 (MEPC 64)
27	JFE BallastAce that makes use of NEO-CHLOR MARINE™, Japan	JFE Engineering Corporation	5 October 2012 (MEPC 64)
28	Smart Ballast BWMS, Republic of Korea	STX Metal Co., Ltd.	5 October 2012 (MEPC 64)
29	AQUARIUS® EC Ballast Water Management System, the Netherlands	Wärtsilä Water Systems Limited	17 May 2013 (MEPC 65)
30	EcoGuardian™ Ballast Water Management System, Republic of Korea	Hanla IMS Co., Ltd.	17 May 2013 (MEPC 65)
31	OceanDoctor BWMS, China	Jiujiang Precision Measuring Technology Research Institute and Institute of Marine Materials Science and Engineering of Shanghai Maritime University	17 May 2013 (MEPC 65)
32	Ballast Water Management System with PERACLEAN® OCEAN (SKY-SYSTEM), Japan	Nippon Yuka Kogyo Co., and Katayama Chemical, Inc.	4 April 2014 (MEPC 66)
33	Evonik Ballast Water Treatment System with PERACLEAN® OCEAN, Germany	Evonik Industries AG	4 April 2014 (MEPC 66)
34	MARINOMATE™ Ballast Water Management System, Republic of Korea	KT Marine Co. Ltd.	17 October 2014 (MEPC 67)
35	BlueZone™ Ballast Water Management System, Republic of Korea	SUNBO Industries Co. Ltd.	17 October 2014 (MEPC 67)

	Name of the system and proposing country	Name of manufacturer	Date of Final Approval
36	KURITA Ballast Water Management System, Japan	Kurita Water Industries Ltd.	17 October 2014 (MEPC 67)
37	Ecomarine-EC Ballast Water Management System, Japan	Ecomarine Technology Research Association	15 May 2015 (MEPC 68)
38	ECS-HYCHLOR™ System, Republic of Korea	TEHCROSS Inc.	22 April 2016 (MEPC 69)
39	NK-CI BlueBallast System, Republic of Korea	NK Company Ltd.	22 April 2016 (MEPC 69)
40	ATPS-BLUE _{sys} Ballast Water Management System, Japan	Panasonic Environmental Systems & Engineering Co., Ltd.	22 April 2016 (MEPC 69)

Annex 3 - List of ballast water management systems which received Type Approval Certification by their respective Administrations (resolutions MEPC.175(58) and MEPC.228(65))⁵

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
1	June 2008	Det Norske Veritas, on behalf of the Norwegian Administration	PureBallast System	Provided (MEPC 61/INF.3)	Yes, please refer to MEPC 56/2/2, annex 5	MEPC 56/23, paragraph 2.8
2	10 June 2008	Federal Maritime and Hydrographic Agency, Germany	SEDNA® Ballast Water Management System (Using Peraclean® Ocean)	Provided (MEPC 58/INF.17)	Yes, please refer to MEPC 57/2/10, annex 7	MEPC 57/21, paragraph 2.16
3	2 September 2008	Office of the Maritime Administration, Marshall Islands	NEI Treatment System VOS-2500-101	Available at request	No Active Substances used according to the communication received from the Administration of Marshall Islands (Letter of 10 Dec. 2008)	Not applicable
	19 January 2010	Merchant Shipping Directorate of Malta		Provided (BWM.2/Circ.25)		
4	31 December 2008	Ministry of Land, Transport and Maritime Affairs, Republic of Korea	Electro-Clean™ System	Provided (MEPC 59/INF.6)	Yes, please refer to MEPC 58/2/7, annex 7	MEPC 58/23, paragraph 2.8
5	17 April 2009	Det Norske Veritas, on behalf of the Norwegian Maritime Directorate	OceanSaver® Ballast Water Management System	Provided (MEPC 59/INF.17 and MEPC 62/INF.15)	Yes, please refer to MEPC 58/2/8, annex 4	MEPC 58/23, paragraph 2.10
6	24 November 2009	Ministry of Land, Transport and Maritime Affairs, Republic of Korea	NK-O3 BlueBallast System (Ozone)	Provided (MEPC 60/INF.14)	Yes, please refer to MEPC 59/2/16, annex 6	MEPC 59/24, paragraph 2.8.
7	4 December 2009	Ministry of Land, Transport and Maritime Affairs, Republic of Korea	GloEn-Patrol™ Ballast Water Management System	Provided (MEPC 61/2/19)	Yes, please refer to MEPC 60/2/11, annex 4	MEPC 60/22, paragraph 2.7
8	5 March 2010	Ministry of Land, Infrastructure, Transport and Tourism of Japan	Hitachi Ballast Water Management System (ClearBallast)	Provided (MEPC 61/INF.21)	Yes, please refer to MEPC 59/2/19, annex 4	MEPC 59/24, paragraph 2.8

⁵ Above information was compiled based on information provided by the respective Administrations.

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
9	26 May 2010 and 25 March 2011	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	JFE BallastAce® Ballast Water Management System	Provided (MEPC 62/INF.25)	Yes, please refer to MEPC 60/2/12, annex 5	MEPC 60/22, paragraph 2.7
10	1 September 2010	Federal Maritime and Hydrographic Agency, Germany	CleanBallast® 500-1 ballast water management system (formerly named RWO Ballast Water Management System (CleanBallast))	Provided (MEPC 67/INF.29)	Yes, please refer to MEPC 59/2/16, annex 5	MEPC 59/24, paragraph 2.8
11	28 January 2011	China Maritime Safety Administration	BalClor™ Ballast Water Management System	Provided (MEPC 62/INF.29)	Yes, please refer to MEPC 61/2/15, annex 9	MEPC 61/24, Paragraph 2.7.3
12	19 April 2011 Renewal 18 January 2013	The South African Department of Transport The South African Department of Transport	Resource Ballast Technologies System	Provided (MEPC 62/INF.18) Provided (MEPC 65/INF.26)	Yes, please refer to MEPC 60/2/11, annex 7	MEPC 60/22, paragraph 2.7
13	29 April 2009	Lloyd's Register, as delegated by the Administration of the United Kingdom	Hyde GUARDIAN™ ballast water management system	Provided (MEPC 59/INF.20)	No Active Substances used according to the communication received from the Administration of United Kingdom (please refer to MEPC 59/INF.20)	Not applicable
14	12 November 2009	Det Norske Veritas, on behalf of the Norwegian Maritime Directorate	OptiMarin Ballast System (OBS)	Provided (MEPC 61/INF.4)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 61/INF.4)	Not applicable

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
15	16 February 2011	China Maritime Safety Administration	Blue Ocean Shield Ballast Water Management System	Provided (MEPC 62/INF.28)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 62/INF.28)	Not applicable
16	10 March 2011	Det Norske Veritas, on behalf of the Norwegian Maritime Directorate	PureBallst 2.0 and PureBallast 2.0 Ex	Provided (MEPC 62/INF.14)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 62/INF.14)	Not applicable
17	16 March 2011	The Ministry of Land, Transport and Maritime Affairs, Republic of Korea	EcoBallast Ballast Water Management System (Hyundai Heavy Industries Co., Ltd.)	Provided (MEPC 63/INF.5)	Yes, please refer to MEPC 59/2/16, annex 8	MEPC 60/22, paragraph 2.13
18	28 March 2011	China Maritime Safety Administration	BSKY™ Ballast Water Management System	Provided (MEPC 62/INF.30)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 62/INF.30)	Not applicable
19	29 April 2011	Federal Maritime and Hydrographic Agency, Germany	Ocean Protection System® OPS-250	Provided (MEPC 67/INF.27)	No Active Substances used according to the communication received from the Administration of Germany (please refer to MEPC 67/INF.27)	Not applicable
20	6 June 2011	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	FineBallast® OZ (the Special Pipe Hybrid Ballast Water Management System combined with Ozone treatment version)	Provided (MEPC 63/INF.12)	Yes, please refer to MEPC 61/2/15, annex 6	MEPC 61/24, paragraph 2.7
21	27 July 2011	Federal Maritime and Hydrographic Agency, Germany	BalPure® BP-500	Provided (MEPC 64/INF.20)	Yes, please refer to MEPC 61/2/21, annex 7	MEPC 61/24, paragraph 2.7

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
22	6 August 2011	Office of the Maritime Administrator, Republic of the Marshall Islands	NEI Treatment System VOS-500 to VOS-6000	Available at request	No Active Substances used according to the communication received from the Administration of Marshall Islands (Letter of 9 August 2011)	Not applicable
23	31 October 2011	The Ministry of Land, Transport and Maritime Affairs, Republic of Korea	Purimar™ System	Provided (MEPC 63/INF.6)	Yes, please refer to MEPC 62/2/18, annex 6	MEPC 62/24, paragraph 2.5
24	7 November 2011	Det Norske Veritas, on behalf of the Norwegian Maritime Directorate	OceanGuard™ Ballast Water Management System	Provided (MEPC 65/INF.2)	Yes, please refer to MEPC 61/2/21, annex 5	MEPC 61/24, paragraph 2.7
25	4 November 2011	Federal Maritime and Hydrographic Agency, Germany	Ecochlor® Ballast Water Treatment System, Series 75	Provided (MEPC 67/INF.26)	Yes, please refer to MEPC 61/2/21, annex 6	MEPC 61/24, paragraph 2.7
26	11 November 2011	The Ministry of Land, Transport and Maritime Affairs, Republic of Korea	HiBallast™ Ballast Water Management System	Provided (MEPC 63/INF.4)	Yes, please refer to MEPC 62/2/18, annex 5	MEPC 62/24, paragraph 2.5
27	22 December 2011	Det Norske Veritas, on behalf of the Norwegian Maritime Directorate	OceanSaver® Ballast Water Management System	Provided (MEPC 64/INF.4)	Yes, please refer to MEPC 58/2/8, annex 4	MEPC 58/23, paragraph 2.10
28	10 May 2012 Amended 15 January 2015	Hellenic Republic, Ministry of Development, Competitiveness and Shipping, General Secretariat of Shipping, Merchant Ships Inspection General Directorate, Design and Construction Directorate	ERMA FIRST BWTS	Provided (MEPC 64/INF.26) Amended (MEPC 68/INF.19)	Yes, please refer to MEPC 63/2/11, annex 5	MEPC 63/23, paragraph 2.7

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
29	30 May 2012	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	MICROFADE™ Ballast Water Management System	Provided (MEPC 64/INF.17)	Yes, please refer to MEPC 63/2/11, annex 6	MEPC 63/23, paragraph 2.7
30	12 June 2012	China Maritime Safety Administration	Cyeco™ Ballast Water Management System	Provided (MEPC 64/INF.12)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 64/INF.12)	Not applicable
31	15 June 2012	The Ministry of Land, Transport and Maritime Affairs, Republic of Korea	AquaStar™ Ballast Water Management System (subsequently changed to AquaStar™ BWMS and MACGREGOR WATER BALLAST TREATMENT SYSTEM)	Provided (MEPC 64/INF.18)	Yes, please refer to MEPC 63/2/11, annex 7	MEPC 63/23, paragraph 2.7
32	12 July 2012	The Ministry of Land, Transport and Maritime Affairs, Republic of Korea	ARA PLASMA BWTS Ballast Water Management System	Provided (MEPC 64/INF.33)	Yes, please refer to MEPC 61/2/15, annex 8	MEPC 61/24, paragraph 2.7
33	27 August 2012	Federal Maritime and Hydrographic Agency, Germany	BallastMaster ultraV 250 ballast water management system (formerly named AquaTriComb BW 250)	Provided (MEPC 67/INF.28)	No Active Substances used according to the communication received from the Administration of Germany (please refer to MEPC 67/INF.28)	Not applicable
34	20 September 2012	The Norwegian Maritime Authority	CrystalBallast® Ballast Water Management System	Provided (MEPC 65/INF.13)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 65/INF.13)	Not applicable
35	7 November 2012	The Danish Maritime Authority and the Danish Nature Agency	DESMI Ocean Guard OxyClean Ballast Water Management System	Provided (MEPC 65/INF.5)	Yes, please refer to MEPC 64/2/6, annex 4	MEPC 64/23, paragraph 2.6

	Approval Date	Name of the Administration	Name of the ballast water management system	Copy of Type Approval Certificate	Active Substance employed	MEPC report granting Final Approval
36	12 December 2012	The Norwegian Maritime Authority	MMC Ballast Water Management System	Provided (MEPC 66/INF.9)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 66/INF.9)	Not applicable
37	20 December 2012	The Netherlands Ministry of Infrastructure and the Environment	Wärtsilä AQUARIUS® UV ballast water management system	Provided (MEPC 65/INF.11)	No Active Substances used according to the communication received from the Administration of the Netherlands (please refer to MEPC 65/INF.11)	Not applicable
38	5 February 2013	China Maritime Safety Administration	BALWAT Ballast Water Management System	Provided (MEPC 66/INF.15)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 66/INF.15)	Not applicable
39	5 June 2013	French Ministry of Ecology Sustainable Development and Energy	BIO-SEA® Ballast Water Treatment System	Provided (MEPC 66/INF.10)	No Active Substances used according to the communication received from the Administration of France (please refer to MEPC 66/INF.10)	Not applicable
40	26 June 2013	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	JFE BallastAce	Provided (MEPC 66/INF.30)	Yes, please refer to MEPC 64/27, annex 5	MEPC 64/23, paragraph 2.6
41	22 August 2013	China Maritime Safety Administration	HY™-BWMS	Provided (MEPC 66/INF.14)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 66/INF.14)	Not applicable
42	10 October 2013	China Maritime Safety Administration	NiBallast™ Ballast Water Management System	Provided (MEPC 66/INF.12)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 66/INF.12)	Not applicable

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43	4 November 2013	China Maritime Safety Administration	Cyeco™ Ballast Water Management System	Provided (MEPC 66/INF.16)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 66/INF.16)	Not applicable
44	5 November 2013	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	FineBallast MF	Provided (MEPC 66/INF.28)	No Active Substances used according to the communication received from the Administration of Japan (please refer to MEPC 66/INF.28)	Not applicable
45	14 November 2013	The Norwegian Maritime Authority	KBAL Ballast Water Management System	Provided (MEPC 65/INF.12)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 65/INF.12)	Not applicable
46	2 December 2013	China Maritime Safety Administration	Seascope Ballast Water Management System	Provided (MEPC 66/INF.13)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 66/INF.13)	Not applicable
47	20 December 2013	The Norwegian Maritime Authority	Trojan Marinex™ Ballast Water Management System	Provided (MEPC 67/INF.6)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 67/INF.6)	Not applicable
48	24 February 2014	Federal Maritime and Hydrographic Agency (BSH)	SeaCURE BWMS SC-1500/1	Provided (MEPC 69/INF.13)	No Active Substances used according to the communication received from the Administration of Germany (please refer to MEPC 69/INF.13)	MEPC 63/23, paragraph 2.7
49	27 March 2014	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	Miura BWMS ballast water management system	Provided (MEPC 67/INF.20)	No Active Substances used according to the communication received from the Administration of Japan (please refer to MEPC 67/INF.20)	Not applicable

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50	30 April 2014	Federal Maritime and Hydrographic Agency, Germany	Cathelco Ballast Water Management System – A2	Provided (MEPC 67/INF.30)	No Active Substances used according to the communication received from the Administration of Germany (please refer to MEPC 67/INF.30)	Not applicable
51	18 June 2014	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	ECOMARINE ballast water management system	Provided (MEPC 67/INF.21)	No Active Substances used according to the communication received from the Administration of Japan (please refer to MEPC 67/INF.21)	Not applicable
52	30 June 2014	The Norwegian Maritime Authority	Alfa Laval PureBallast 3.0 Ballast Water Management System	Provided (MEPC 67/INF.5)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 67/INF.5)	Not applicable
53	11 July 2014	China Maritime Safety Administration	PACT marine™ Ballast Water Management System	Provided (MEPC 68/INF.5)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 68/INF.5)	Not applicable
54	5 September 2014	The Danish Maritime Authority and The Danish Nature Agency	RayClean™ BWTS	Provided (MEPC 68/INF.10)	No Active Substances used according to the communication received from the Administration of Denmark (please refer to MEPC 68/INF.10)	Not applicable
55	21 October 2014	Inspection and Measurement Division, Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism of Japan	SKY-SYSTEM®	Provided (MEPC 68/INF.28)	Yes, please refer to MEPC 66/2/7, annex 4 and Corr.1	MEPC 66/21, paragraph 2.5
56	17 November 2014	China Maritime Safety Administration	OceanDoctor® Ballast Water Management System	Provided (MEPC 68/INF.4)	Yes, please refer to MEPC 65/2/19, annex 7	MEPC 65/22 paragraph 2.8

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57	5 January 2015	The Danish Maritime Authority and The Danish Nature Agency	Bawat™ BWMS	Provided (MEPC 68/INF.9)	No Active Substances used according to the communication received from the Administration of Denmark (please refer to MEPC 68/INF.9)	Not applicable
58	27 January 2015	China Maritime Safety Administration	AHEAD®-BWMS ballast water management system	Provided (MEPC 69/INF.2)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 68/INF.2)	Not applicable
59	6 February 2015	United Kingdom, Maritime & Coastguard Agency	Coldharbour GLD™ Ballast Water Management System, incorporating types SeaGuardian™ IGG500 to IGG6000	Provided (MEPC 68/INF.27)	No Active Substances used according to the communication received from the Administration of the United Kingdom (please refer to MEPC 68/INF.27)	Not applicable
60	28 February 2015	China Maritime Safety Administration	YP-BWMS ballast water management system	Provided (MEPC 69/INF.5)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 69/INF.5)	Not applicable
61	8 May 2015	Ministry of Oceans and Fisheries of Republic of Korea	EcoGuardian™ Ballast Water Management System	Provided (MEPC 69/INF.31)	No Active Substances used according to the communication received from the Administration of the Republic of Korea (please refer to MEPC 69/INF.31)	MEPC 65/22, paragraph 2.8
62	8 September 2015	Ministry of Oceans and Fisheries of the Republic of Korea	BlueZone™ Ballast Water Management System	Provided (MEPC 69/INF.32)	No Active Substances used according to the communication received from the Administration of the Republic of Korea (please refer to MEPC 69/INF.32)	MEPC 67/20, paragraph 2.6
63	12 September 2015	China Maritime Safety Administration	NiBallast™ Ballast Water Management System	Provided (MEPC 69/INF.3)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 69/INF.3)	Not applicable

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64	19 November 2015	Netherlands Shipping Inspectorate, Ministry of Infrastructure and the Environment	Van Oord Ballast Water Management System	Provided (MEPC 69/INF.15)	No Active Substances used according to the communication received from the Administration of Norway (please refer to MEPC 69/INF.15)	Please see MEPC 65/22, paragraph 2.5
65	21 December 2015	China Maritime Safety Administration	Seascope® Ballast Water Management System	Provided (MEPC 69/INF.4)	No Active Substances used according to the communication received from the Administration of China (please refer to MEPC 69/INF.4)	Not applicable

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