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Control and Management of Ships' Ballast Water in the Adriatic Sea Region

- A Collection of Legal Texts -

The project is co-funded by the European Union,
Instrument for Pre-Accession Assistance

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"CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER IN THE ADRIATIC SEA REGION. A COLLECTION OF LEGAL TEXTS"

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We thank Paola Giambanco (ISPRA) for her review of English texts.

ISPRA, Documenti tecnici, 2016
ISBN 978-88-448-0783-2

This book should be quoted as follows: RAK G., DE VENDICTIS G. (eds.). 2016. Control and Management of Ships' Ballast Water in the Adriatic Sea Region. A Collection of Legal Texts. BALMAS project. Work Package 9, Activity 1, Documenti Tecnici ISPRA, pp. 535.

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This publication has been produced with the financial assistance of the IPA Adriatic Cross-Border Cooperation Programme. The contents of this publication are the sole responsibility of ISPRA and can under no circumstances be regarded as reflecting the position of the IPA Adriatic Cross-Border Cooperation Programme Authorities.

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Published by: Tiburtini s.r.l. Via delle Case Rosse 23 00131 Rome - Italy
Cover design: Franco Iozzoli, Elena Porrazzo (ISPRA)
Cover photo: Paolo Orlandi (ISPRA)
Graphic layout: Tiburtini s.r.l.
ISPRA editorial series co-ordination: Daria Mazzella

Printed in recycled paper, FSC certificated

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PREFACE

The United Nations had recognized the transfer of harmful organisms and pathogens (HAOPs) across natural barriers as one of the greatest pressures to the world's oceans and seas, causing global environmental changes, threatening human health, property and resources. Among the activities causing such pressure is international shipping.

The negative effects of the discharge at sea of ballast waters which, even if not mixed with cargo residues, may contain harmful organisms and pathogens, are likely to be more dramatic if considering the recipient environment feature. In the Adriatic Sea, a semi-enclosed basin wedged within the Mediterranean Sea, a huge volume of shipping coexists with vulnerable ecosystems and significant economies which highly depend on the sea qualities. Environment, human health, tourism, fisheries as well as other sea uses and values might be impaired by this form of biological pollution.

Along these considerations, the European Union has included the protection from ballast water pollution among strategic priorities for funding under the IPA Adriatic cross-border cooperation programme and, in 2012, the BALMAS project "Ballast water management system for Adriatic Sea protection" received financial assistance. The BALMAS activities focus on the development of knowledge and tools, including the establishment of links between experts and national authorities from Adriatic partner's countries, supporting a common Adriatic cross-border system for the control and management of risks deriving from the HAOPs introduction. Such system would facilitate the development of consistent measures and coherent responses for the whole basin.

Nowadays, the global legal terms for the control and management of ships' ballast hinge upon the entry into force of the 2004 International Convention on the Control and Management of Ships' Ballast Waters and Sediments (the BWM Convention), as complemented by a number of international guidance documents. Pending the entry into force of these global obligations, States have approved national measures on ballast water management or have developed regional policies acting through international organizations. In the Adriatic Sea, three bordering States already ratified the BWM Convention and approved measures on the same matter. In other Adriatic countries, administrative arrangements have been set in connection to the forthcoming global standards.

The existing legal and policy framework is a fundamental for the BALMAS Project, which has dedicated a specific work package to this end. This book was realized with the aim to enhance acquaintance of the upcoming rules for authorities, interested bodies and other stakeholders. An appropriate familiarity with the existing framework of policies and commitments is a pre-requisite of any action – either public or private, international or local – aiming at managing the HAOPs transfer through ballast water and to keep the related threats under control. As it was underlined, training of responsible parties in time to comply with the enforcement of the BWM Convention is the greatest challenge to the twenty year-long effort to standardize the management of ballast water globally. In the Adriatic region, education and training could benefit from the key legal materials of this book, which includes the formal instruments currently available.

Because regulations are frequently amended, this book has been printed in a limited edition, whereas a user-friendly pdf version will be downloadable from the project website (www.balmas.eu).

1. INTRODUCTION

The presence of marine “invasive”, “alien” or other way "harmful" species at sea has been recognized as a major threat for the marine environments, human health and marine/maritime economies, such as fisheries and tourism. At different levels, different sectors of law are addressing related concerns, thus establishing obligations on the presence of these species and on the management of those human activities capable to introduce them into environments[1]. International shipping is among these activities because of the uptake and discharge of vessel’s ballast waters, which is a routine operation for the overwhelming majority of ships' engaged in international trade. The international maritime community committed to the adoption of global standards on the matter, facilitated to this end by the agency within the UN system specialized on international shipping and maritime issues, the International Maritime Organization (IMO). According to its founding treaty, the IMO provides machinery for co-operation among Governments for the prevention and control of marine pollution from ships and encourages the general adoption of the highest practicable standards on international shipping[2]. The IMO discussion on the ballast water theme started in 1991[3] and made a fundamental step forward with the signature of the text of the International Convention for the Control and Management of Ships′ Ballast Water and Sediments (London 2004).

At the moment of publishing this collection of legal materials, the BWM Convention’s entry into force is still pending. As it happens for all shipping-related multilateral agreements, the conditions set for its entry into force are linked not only to the number of ratifying States but also to the percentage of the world's tonnage fleet that these States represent[4]. Several elements are delaying the coming into force of the new rules: from the technical complexity of the standards implementation, to the extent of the private investments needed. Following the Convention’s text adoption, an intensive cooperation is taking place within the IMO’s Marine Environment Protection Committee. Attempting to clear the picture, guiding the standards implementation and smoothing constrains, this international process resulted in a huge amount of legal materials so far. Most of these materials are collected and organized in this book, which aims to facilitate their consultation and to support both the BALMAS project training activities and further training that might take place in the Adriatic region.

Although many environmental law materials were identified as relevant for the subject, in order to maintain the focus on shipping matters, this book includes only those documents specifically referring to the control and management of ships’ ballast waters[5]. Other documents connected to the broader environmental sector of law have been mentioned in different BALMAS project publications[6].

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1 For an updated review see of main legal and policy instruments dealing with alien, invasive and harmful species and pathogens, RAK G. 2016. Legal and Policy Aspects Relevant for the Ships' Ballast Water Managment in the Adriatic Sea Area. BALMAS Project Final Report. Work Package 9. pp. 90 and RAK G., DE VENDICTIS G. 2015. Annotated list of BWM relevant international, European and local regulations and policies. Review. BALMAS project. Work Package 9, Activity 1, pp. 44.

2 The original 1948 Treaty on the Intergovernmental Maritime Consultative Organization (IMCO) was amended by the IMCO Assembly resolutions A.358 (IX) of 14 November 1975 and A.371 (X) of 9 November 1977, which had changed the organization’s name into “International Maritime Organization (IMO)”, enhancing its scope to the protection of the marine environment and establishing, to this end, among its bodies the “Marine Environment Protection Committee” (MEPC).

3 In 1991 the IMO’s Marine Environment Protection Committee (MEPC) began the process of creating the framework of regulations which would become the BWM Convention. For the purpose of addressing the transfer of HAOPs, the IMO Assembly adopted in 1997, resolution A.868(20) containing “Guidelines for the control and management of ships’ ballast water to minimize the transfer of harmful aquatic organisms and pathogens”.

4 The BWM Convention would enter into force 12 months after ratification by 30 States, representing 35 per cent of world merchant shipping tonnage. The number of Contracting Governments to the Convention on 18 April 2016 was 49, representing 34.79% of the world’s merchant fleet.

5 The only exception are legal materials on port State control, considered of a prominent relevance for training purposes.

6 For further reference, see above, footnote 1.

The selected legal materials have been organized into three chapters focusing on the following different levels: the global regime and related international guidance (Chapter 2), the Mediterranean region (Chapter 3) and the national legislation of countries bordering the Adriatic Sea (Chapter 4). Following the consultation of the project partners, it was deemed important to include an Addendum on port State control, a crucial theme for the future obligations compliance and enforcement.

Chapter 2 includes the text of the BWM Convention (paragraph 2.1) as well as a number of guidelines and circulars developed within the IMO so far. Guidelines are grouped according to whether they have been specifically referred to in the Convention or their adoption was considered opportune at a later stage (respectively, paragraph 2.2. and 2.3.). As international rule making is an ongoing process, at the moment of the publication of this book some of these guidelines are under review (e.g. G8 Guidelines). Paragraph 2.4. contains a selection of IMO Circulars with a general relevance according to the periodical review made by the Organization[7]. Circulars included are those issued by the Organization under the symbol "BWM.2/Circ.." as their contents are related to technical aspects of ballast water management[8].

In order to comprehensively capture the Adriatic Sea picture, Chapter 3 includes implementing decisions adopted at Mediterranean level. Differently from Multilateral Environmental Agreements, global shipping agreements do not have a regional legal projection, even if cooperation would be needed at the marine regions level in order to seek a smooth and, what is equally important, effective implementation. Cooperation on ballast water management produced relevant decisions for different marine regions of the world. In the Mediterranean Sea, the forum for such decisions has been the region's environmental framework agreement, the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (last amended in 1995), whose Secretariat functions are performed by the United Nations Environment Programme (UNEP)[9]. States Parties to the Barcelona Convention approved a number of acts, inclutding the Regional strategy addressing ship's ballast water management and invasive species, which can be considered as non-mandatory, beforehand implementations of the BWM Convention obligations. It can be worth noting that, within the challenging environmental cooperation in the region, the discussions on shipping-related issues are supported by the work of a jointly UNEP/MAP-IMO administered regional centre, namely the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)[10].

Chapter 4 includes national legislation and regulations approved by States bordering the Adriatic Sea, three of which have already ratified the BWM Convention (e.g. Albania, Croatia and Montenegro). National legal materials are reproduced in the original language version with a courtesy English translation provided by the BALMAS project partners. Those legal acts which, although relevant to the theme, do not directly implement the BWM Convention, have been reported in other BALMAS project publications[11].

Finally, the Addendum on port State control includes acts proceeding from different legal levels: the Paris Memorandum of Understanding on port State control, an inter-governmental agreement among maritime authorities from Europe plus Russian Federation and Canada, which has been already amended to include the reference to the 2004 BWM Convention; and the European Union Directive No. 2009/16/EC of 23 April 2009 on port State control. Both legal instruments are legally binding only for three out of six BALMAS partners countries, however their outstanding importance for the BWM Convention compliance and enforcement has been recognized by all partners, leading to include related texts in this collection.

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7 For an update, please consult: www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx

8 The Organization issues Circulars with different symbols in order to facilitate the prompt identification of related content: under the symbol "BWM.1/Circ.." are those related to the status of the BWM Convention and under the symbol "BWM.2 /Circ.." those related to technical aspects of ballast water management.

9 For further information on the UNEP/MAP and on relevant regional agreements see www.unepmap.org.

10 For details see RAK G. 2016. BALMAS Project Final Report, cit. above, footnote 1

11 See above, footnote 1.

2. GLOBAL REGIME AND GUIDELINES

2.1 The BWM Convention

INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

THE PARTIES TO THIS CONVENTION,

RECALLING Article 196(1) of the 1982 United Nations Convention on the Law of the Sea (UNCLOS), which provides that "States shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control, or the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto,"

NOTING the objectives of the 1992 Convention on Biological Diversity (CBD) and that the transfer and introduction of Harmful Aquatic Organisms and Pathogens via ships' ballast water threatens the conservation and sustainable use of biological diversity as well as decision IV/5 of the 1998 Conference of the Parties (COP 4) to the CBD concerning the conservation and sustainable use of marine and coastal ecosystems, as well as decision VI/23 of the 2002 Conference of the Parties (COP 6) to the CBD on alien species that threaten ecosystems, habitats or species, including guiding principles on invasive species,

NOTING FURTHER that the 1992 United Nations Conference on Environment and Development (UNCED) requested the International Maritime Organization (the Organization) to consider the adoption of appropriate rules on ballast water discharge,

MINDFUL of the precautionary approach set out in Principle 15 of the Rio Declaration on Environment and Development and referred to in resolution MEPC.67(37), adopted by the Organization's Marine Environment Protection Committee on 15 September 1995,

ALSO MINDFUL that the 2002 World Summit on Sustainable Development, in paragraph 34(b) of its Plan of Implementation, calls for action at all levels to accelerate the development of measures to address invasive alien species in ballast water,

CONSCIOUS that the uncontrolled discharge of Ballast Water and Sediments from ships has led to the transfer of Harmful Aquatic Organisms and Pathogens, causing injury or damage to the environment, human health, property and resources,

RECOGNIZING the importance placed on this issue by the Organization through Assembly resolutions A.774(18) in 1993 and A.868(20) in 1997, adopted for the purpose of addressing the transfer of Harmful Aquatic Organisms and Pathogens,

RECOGNIZING FURTHER that several States have taken individual action with a view to prevent, minimize and ultimately eliminate the risks of introduction of 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 regulations together with guidelines for their effective implementation and uniform interpretation,

DESIRING to continue the development of safer and more effective Ballast Water Management options that will result in continued prevention, minimization and ultimate elimination of the transfer of Harmful Aquatic Organisms and Pathogens,

RESOLVED to prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast Water and Sediments, as well as to avoid unwanted side-effects from that control and to encourage developments in related knowledge and technology,

CONSIDERING that these objectives may best be achieved by the conclusion of an International Convention for the Control and Management of Ships' Ballast Water and Sediments,

HAVE AGREED as follows:

Article 1 *Definitions*

For the purpose of this Convention, unless expressly provided otherwise:

1 "Administration" means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to floating platforms engaged in exploration and exploitation of the sea-bed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of its natural resources, including Floating Storage Units (FSUs) and Floating Production Storage and Offloading Units (FPSOs), the Administration is the Government of the coastal State concerned.

2 "Ballast Water" means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship.

3 "Ballast Water Management" means mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of Harmful Aquatic Organisms and Pathogens within Ballast Water and Sediments.

4 "Certificate" means the International Ballast Water Management Certificate.

5 "Committee" means the Marine Environment Protection Committee of the Organization.

6 "Convention" means the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

7 "Gross tonnage" means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurement of Ships, 1969 or any successor Convention.

8 "Harmful Aquatic Organisms and Pathogens" means aquatic organisms or pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas.

9 "Organization" means the International Maritime Organization.

10 "Secretary-General" means the Secretary-General of the Organization.

11 "Sediments" means matter settled out of Ballast Water within a ship.

12 "Ship" means a vessel of any type whatsoever operating in the aquatic environment and includes submersibles, floating craft, floating platforms, FSUs and FPSOs.

Article 2 *General Obligations*

1 Parties undertake to give full and complete effect to the provisions of this Convention and the Annex thereto in order to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast Water and Sediments.

2 The Annex forms an integral part of this Convention. Unless expressly provided otherwise, a reference to this Convention constitutes at the same time a reference to the Annex.

3 Nothing in this Convention shall be interpreted as preventing a Party from taking, individually or

jointly with other Parties, more stringent measures with respect to the prevention, reduction or elimination of the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast Water and Sediments, consistent with international law.

4 Parties shall endeavour to co-operate for the purpose of effective implementation, compliance and enforcement of this Convention.

5 Parties undertake to encourage the continued development of Ballast Water Management and standards to prevent, minimize and ultimately eliminate the transfer of Harmful Aquatic Organisms and Pathogens through the control and management of ships' Ballast Water and Sediments.

6 Parties taking action pursuant to this Convention shall endeavour not to impair or damage their environment, human health, property or resources, or those of other States.

7 Parties should ensure that Ballast Water Management practices used to comply with this Convention do not cause greater harm than they prevent to their environment, human health, property or resources, or those of other States.

8 Parties shall encourage ships entitled to fly their flag, and to which this Convention applies, to avoid, as far as practicable, the uptake of Ballast Water with potentially Harmful Aquatic Organisms and Pathogens, as well as Sediments that may contain such organisms, including promoting the adequate implementation of recommendations developed by the Organization.

9 Parties shall endeavour to co-operate under the auspices of the Organization to address threats and risks to sensitive, vulnerable or threatened marine ecosystems and biodiversity in areas beyond the limits of national jurisdiction in relation to Ballast Water Management.

Article 3 *Application*

1 Except as expressly provided otherwise in this Convention, this Convention shall apply to:

(a) ships entitled to fly the flag of a Party; and

(b) ships not entitled to fly the flag of a Party but which operate under the authority of a Party.

2 This Convention shall not apply to:

(a) ships not designed or constructed to carry Ballast Water;

(b) ships of a Party which only operate in waters under the jurisdiction of that Party, unless the Party determines that the discharge of Ballast Water from such ships would impair or damage their environment, human health, property or resources, or those of adjacent or other States;

(c) ships of a Party which only operate in waters under the jurisdiction of another Party, subject to the authorization of the latter Party for such exclusion. No Party shall grant such authorization if doing so would impair or damage their environment, human health, property or resources, or those of adjacent or other States. Any Party not granting such authorization shall notify the Administration of the ship concerned that this Convention applies to such ship;

(d) ships which only operate in waters under the jurisdiction of one Party and on the high seas, except for ships not granted an authorization pursuant to sub-paragraph (c), unless such Party determines that the discharge of Ballast Water from such ships would impair or damage their environment, human health, property or resources, or those of adjacent of other States;

(e) any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with this Convention; and

(f) permanent Ballast Water in sealed tanks on ships, that is not subject to discharge.

3 With respect to ships of non-Parties to this Convention, Parties shall apply the requirements of this Convention as may be necessary to ensure that no more favourable treatment is given to such ships.

Article 4 *Control of the Transfer of Harmful Aquatic Organisms and Pathogens Through Ships' Ballast Water and Sediments*

1 Each Party shall require that ships to which this Convention applies and which are entitled to fly its flag or operating under its authority comply with the requirements set forth in this Convention, including the applicable standards and requirements in the Annex, and shall take effective measures to ensure that those ships comply with those requirements.

2 Each Party shall, with due regard to its particular conditions and capabilities, develop national policies, strategies or programmes for Ballast Water Management in its ports and waters under its jurisdiction that accord with, and promote the attainment of the objectives of this Convention.

Article 5 *Sediment Reception Facilities*

1 Each Party undertakes to ensure that, in ports and terminals designated by that Party where cleaning or repair of ballast tanks occurs, adequate facilities are provided for the reception of Sediments, taking into account the Guidelines developed by the Organization. Such reception facilities shall operate without causing undue delay to ships and shall provide for the safe disposal of such Sediments that does not impair or damage their environment, human health, property or resources or those of other States.

2 Each Party shall notify the Organization for transmission to the other Parties concerned of all cases where the facilities provided under paragraph 1 are alleged to be inadequate.

Article 6 *Scientific and Technical Research and Monitoring*

1 Parties shall endeavour, individually or jointly, to:

(a) promote and facilitate scientific and technical research on Ballast Water Management; and

(b) monitor the effects of Ballast Water Management in waters under their jurisdiction.

Such research and monitoring should include observation, measurement, sampling, evaluation and analysis of the effectiveness and adverse impacts of any technology or methodology as well as any adverse impacts caused by such organisms and pathogens that have been identified to have been transferred through ships' Ballast Water.

2 Each Party shall, to further the objectives of this Convention, promote the availability of relevant information to other Parties who request it on:

(a) scientific and technology programmes and technical measures undertaken with respect to Ballast Water Management; and

(b) the effectiveness of Ballast Water Management deduced from any monitoring and assessment programmes.

Article 7 *Survey and certification*

1 Each Party shall ensure that ships flying its flag or operating under its authority and subject to survey and certification are so surveyed and certified in accordance with the regulations in the Annex.

2 A Party implementing measures pursuant to Article 2.3 and Section C of the Annex shall not require additional survey and certification of a ship of another Party, nor shall the Administration of the ship be obligated to survey and certify additional measures imposed by another Party. Verification of such additional measures shall be the responsibility of the Party implementing such measures and shall not cause undue delay to the ship.

Article 8 *Violations*

1 Any violation of the requirements of this Convention shall be prohibited and sanctions shall be established under the law of the Administration of the ship concerned, wherever the violation occurs. If the Administration is informed of such a violation, it shall investigate the matter and may request the reporting Party to furnish additional evidence of the alleged violation. If the Administration is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken as soon as possible, in accordance with its law. The Administration shall promptly inform the Party that reported the alleged violation, as well as the Organization, of any action taken. If the Administration has not taken any action within 1 year after receiving the information, it shall so inform the Party which reported the alleged violation.

2 Any violation of the requirements of this Convention within the jurisdiction of any Party shall be prohibited and sanctions shall be established under the law of that Party. Whenever such a violation occurs, that Party shall either:

(a) cause proceedings to be taken in accordance with its law; or

(b) furnish to the Administration of the ship such information and evidence as may be in its possession that a violation has occurred.

3 The sanctions provided for by the laws of a Party pursuant to this Article shall be adequate in severity to discourage violations of this Convention wherever they occur.

Article 9 *Inspection of Ships*

1 A ship to which this Convention applies may, in any port or offshore terminal of another Party, be subject to inspection by officers duly authorized by that Party for the purpose of determining whether the ship is in compliance with this Convention. Except as provided in paragraph 2 of this Article, any such inspection is limited to:

(a) verifying that there is onboard a valid Certificate, which, if valid shall be accepted; and

(b) inspection of the Ballast Water record book, and/or

(c) a sampling of the ship's Ballast Water, carried out in accordance with the guidelines to be developed by the Organization. However, the time required to analyse the samples shall not be used as a basis for unduly delaying the operation, movement or departure of the ship.

2 Where a ship does not carry a valid Certificate or there are clear grounds for believing that:

(a) the condition of the ship or its equipment does not correspond substantially with the particulars of the Certificate; or

(b) the master or the crew are not familiar with essential shipboard procedures relating to Ballast Water Management, or have not implemented such procedures;

a detailed inspection may be carried out.

1 In the circumstances given in paragraph 2 of this Article, the Party carrying out the inspection shall take such steps as will ensure that the ship shall not discharge Ballast Water until it can do so without presenting a threat of harm to the environment, human health, property or resources.

Article 10 *Detection of Violations and Control of Ships*

1 Parties shall co-operate in the detection of violations and the enforcement of the provisions of this Convention.

2 If a ship is detected to have violated this Convention, the Party whose flag the ship is entitled to fly, and/or the Party in whose port or offshore terminal the ship is operating, may, in addition to any sanctions described in Article 8 or any action described in Article 9, take steps to warn, detain, or exclude the ship. The Party in whose port or offshore terminal the ship is operating, however, may grant such a ship permission to leave the port or offshore terminal for the purpose of discharging Ballast Water or proceeding to the nearest appropriate repair yard or reception facility available, provided doing so does not present a threat of harm to the environment, human health, property or resources.

3 If the sampling described in Article 9.1(c) leads to a result, or supports information received from another port or offshore terminal, indicating that the ship poses a threat to the environment, human health, property or resources, the Party in whose waters the ship is operating shall prohibit such ship from discharging Ballast Water until the threat is removed.

4 A Party may also inspect a ship when it enters the ports or offshore terminals under its jurisdiction, if a request for an investigation is received from any Party, together with sufficient evidence that a ship is operating or has operated in violation of a provision in this Convention. The report of such investigation shall be sent to the Party requesting it and to the competent authority of the Administration of the ship concerned so that appropriate action may be taken.

Article 11 *Notification of Control Actions*

1 If an inspection conducted pursuant to Article 9 or 10 indicates a violation of this Convention, the ship shall be notified. A report shall be forwarded to the Administration, including any evidence of the violation.

2 In the event that any action is taken pursuant to Article 9.3, 10.2 or 10.3, the officer carrying out such action shall forthwith inform, in writing, the Administration of the ship concerned, or if this is not possible, the consul or diplomatic representative of the ship concerned, of all the circumstances in which the action was deemed necessary. In addition, the recognized organization responsible for the issue of certificates shall be notified.

3 The port State authority concerned shall, in addition to parties mentioned in paragraph 2, notify the next port of call of all relevant information about the violation, if it is unable to take action as specified in Article 9.3, 10.2 or 10.3 or if the ship has been allowed to proceed to the next port of call.

Article 12 *Undue Delay to Ships*

1 All possible efforts shall be made to avoid a ship being unduly detained or delayed under Article 7.2, 8, 9 or 10.

2 When a ship is unduly detained or delayed under Article 7.2, 8, 9 or 10, it shall be entitled to compensation for any loss or damage suffered.

Article 13 *Technical Assistance, Co-operation and Regional Co-operation*

1 Parties undertake, directly or through the Organization and other international bodies, as appropri-

ate, in respect of the control and management of ships' Ballast Water and Sediments, to provide support for those Parties which request technical assistance:

(a) to train personnel;

(b) to ensure the availability of relevant technology, equipment and facilities;

(c) to initiate joint research and development programmes; and

(d) to undertake other action aimed at the effective implementation of this Convention and of guidance developed by the Organization related thereto.

2 Parties undertake to co-operate actively, subject to their national laws, regulations and policies, in the transfer of technology in respect of the control and management of ships' Ballast Water and Sediments.

3 In order to further the objectives of this Convention, Parties with common interests to protect the environment, human health, property and resources in a given geographical area, in particular, those Parties bordering enclosed and semi-enclosed seas, shall endeavour, taking into account characteristic regional features, to enhance regional co-operation, including through the conclusion of regional agreements consistent with this Convention. Parties shall seek to co-operate with the Parties to regional agreements to develop harmonized procedures.

Article 14 *Communication of information*

1 Each Party shall report to the Organization and, where appropriate, make available to other Parties the following information:

(a) any requirements and procedures relating to Ballast Water Management, including its laws, regulations, and guidelines for implementation of this Convention;

(b) the availability and location of any reception facilities for the environmentally safe disposal of Ballast Water and Sediments; and

(c) any requirements for information from a ship which is unable to comply with the provisions of this Convention for reasons specified in regulations A-3 and B-4 of the Annex.

2 The Organization shall notify Parties of the receipt of any communications under the present Article and circulate to all Parties any information communicated to it under subparagraphs 1(b) and (c) of this Article.

Article 15 *Dispute Settlement*

Parties shall settle any dispute between them concerning the interpretation or application of this Convention by negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements or other peaceful means of their own choice.

Article 16 *Relationship to International Law and Other Agreements*

Nothing in this Convention shall prejudice the rights and obligations of any State under customary international law as reflected in the United Nations Convention on the Law of the Sea.

Article 17 *Signature, Ratification, Acceptance, Approval and Accession*

1 This Convention shall be open for signature by any State at the Headquarters of the Organization from 1 June 2004 to 31 May 2005 and shall thereafter remain open for accession by any State.

2 States may become Parties to the Convention by:

(a) signature not subject to ratification, acceptance, or approval; or

(b) signature subject to ratification, acceptance, or approval, followed by ratification, acceptance or approval; or

(c) accession.

3 Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General.

4 If a State comprises two or more territorial units in which different systems of law are applicable in relation to matters dealt with in this Convention, it may at the time of signature, ratification, acceptance, approval, or accession declare that this Convention shall extend to all its territorial units or only to one or more of them and may modify this declaration by submitting another declaration at any time.

5 Any such declaration shall be notified to the Depositary in writing and shall state expressly the territorial unit or units to which this Convention applies.

Article 18 *Entry into Force*

1 This Convention shall enter into force twelve months after the date on which not less than thirty States, the combined merchant fleets of which constitute not less than thirty-five percent of the gross tonnage of the world's merchant shipping, have either signed it without reservation as to ratification, acceptance or approval, or have deposited the requisite instrument of ratification, acceptance, approval or accession in accordance with Article 17.

2 For States which have deposited an instrument of ratification, acceptance, approval or accession in respect of this Convention after the requirements for entry into force thereof have been met, but prior to the date of entry in force, the ratification, acceptance, approval or accession shall take effect on the date of entry into force of this Convention or three months after the date of deposit of instrument, whichever is the later date.

3 Any instrument of ratification, acceptance, approval or accession deposited after the date on which this Convention enters into force shall take effect three months after the date of deposit.

4 After the date on which an amendment to this Convention is deemed to have been accepted under Article 19, any instrument of ratification, acceptance, approval or accession deposited shall apply to this Convention as amended.

Article 19 *Amendments*

1 This Convention may be amended by either of the procedures specified in the following paragraphs.

2 Amendments after consideration within the Organization:

(a) Any Party may propose an amendment to this Convention. A proposed amendment shall be submitted to the Secretary-General, who shall then circulate it to the Parties and Members of the Organization at least six months prior to its consideration.

(b) An amendment proposed and circulated as above shall be referred to the Committee for consideration. Parties, whether or not Members of the Organization, shall be entitled to participate in the proceedings of the Committee for consideration and adoption of the amendment.

(c) Amendments shall be adopted by a two-thirds majority of the Parties present and voting in the Committee, on condition that at least one-third of the Parties shall be present at the time of voting.

(d) Amendments adopted in accordance with subparagraph (c) shall be communicated by the Secretary-General to the Parties for acceptance.

(e) An amendment shall be deemed to have been accepted in the following circumstances:

(i) An amendment to an article of this Convention shall be deemed to have been accepted on the date on which two-thirds of the Parties have notified the Secretary-General of their acceptance of it.

(ii) An amendment to the Annex shall be deemed to have been accepted at the end of twelve months after the date of adoption or such other date as determined by the Committee. However, if by that date more than one-third of the Parties notify the Secretary-General that they object to the amendment, it shall be deemed not to have been accepted.

(f) An amendment shall enter into force under the following conditions:

(i) An amendment to an article of this Convention shall enter into force for those Parties that have declared that they have accepted it six months after the date on which it is deemed to have been accepted in accordance with subparagraph (e)(i).

(ii) An amendment to the Annex shall enter into force with respect to all Parties six months after the date on which it is deemed to have been accepted, except for any Party that has:

(1) notified its objection to the amendment in accordance with subparagraph (e)(ii) and that has not withdrawn such objection; or

(2) notified the Secretary-General, prior to the entry into force of such amendment, that the amendment shall enter into force for it only after a subsequent notification of its acceptance.

(g) (i) A Party that has notified an objection under subparagraph (f)(ii)(1) may subsequently notify the Secretary-General that it accepts the amendment. Such amendment shall enter into force for such Party six months after the date of its notification of acceptance, or the date on which the amendment enters into force, whichever is the later date.

(ii) If a Party that has made a notification referred to in subparagraph (f)(ii)(2) notifies the Secretary-General of its acceptance with respect to an amendment, such amendment shall enter into force for such Party six months after the date of its notification of acceptance, or the date on which the amendment enters into force, whichever is the later date

3 Amendment by a Conference:

(a) Upon the request of a Party concurred in by at least one-third of the Parties, the Organization shall convene a Conference of Parties to consider amendments to this Convention.

(b) An amendment adopted by such a Conference by a two-thirds majority of the Parties present and voting shall be communicated by the Secretary-General to all Parties for acceptance.

(c) Unless the Conference decides otherwise, the amendment shall be deemed to have been accepted and shall enter into force in accordance with the procedures specified in paragraphs 2(e) and (f) respectively.

4 Any Party that has declined to accept an amendment to the Annex shall be treated as a non-Party only for the purpose of application of that amendment.

5 Any notification under this Article shall be made in writing to the Secretary-General.

6 The Secretary-General shall inform the Parties and Members of the Organization of:

(a) any amendment that enters into force and the date of its entry into force generally and for each Party; and

(b) any notification made under this Article.

Article 20 *Denunciation*

1 This Convention may be denounced by any Party at any time after the expiry of two years from the date on which this Convention enters into force for that Party.

2 Denunciation shall be effected by written notification to the Depositary, to take effect one year after receipt or such longer period as may be specified in that notification.

Article 21 *Depositary*

1 This Convention shall be deposited with the Secretary-General, who shall transmit certified copies of this Convention to all States which have signed this Convention or acceded thereto.

2 In addition to the functions specified elsewhere in this Convention, the Secretary-General shall:

(a) inform all States that have signed this Convention, or acceded thereto, of:

(i) each new signature or deposit of an instrument of ratification, acceptance, approval or accession, together with the date thereof;

(ii) the date of entry into force of this Convention; and

(iii) the deposit of any instrument of denunciation from the Convention, together with the date on which it was received and the date on which the denunciation takes effect; and

(b) as soon as this Convention enters into force, transmit the text thereof to the Secretariat of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

Article 22 *Languages*

This Convention is established in a single original in the Arabic, Chinese, English, French, Russian and Spanish languages, each text being equally authentic.

DONE AT LONDON this thirteenth day of February, two thousand and four.

IN WITNESS WHEREOF the undersigned, being duly authorised by their respective Governments for that purpose, have signed this Convention.

ANNEX

REGULATIONS FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

SECTION A - GENERAL PROVISIONS

Regulation A-1 *Definitions*

For the purposes of this Annex:

1 "Anniversary date" means the day and the month of each year corresponding to the date of expiry of the Certificate.

2 "Ballast Water Capacity" means the total volumetric capacity of any tanks, spaces or compartments on a ship used for carrying, loading or discharging Ballast Water, including any multi-use tank, space or compartment designed to allow carriage of Ballast Water.

3 "Company" means the owner of the ship or any other organization or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the owner of the ship and who on assuming such responsibility has agreed to take over all the duties and responsibilities imposed by the International Safety Management Code[1].

4 "Constructed" in respect of a ship means a stage of construction where:

.1 the keel is laid; or

.2 construction identifiable with the specific ship begins;

.3 assembly of the ship has commenced comprising at least 50 tonnes or 1 percent of the estimated mass of all structural material, whichever is less; or

.4 the ship undergoes a major conversion.

5 "Major conversion" means a conversion of a ship:

.1 which changes its ballast water carrying capacity by 15 percent or greater, or

.2 which changes the ship type, or

.3 which, in the opinion of the Administration, is projected to prolong its life by ten years or more, or

.4 which results in modifications to its ballast water system other than component replacement-in-kind. Conversion of a ship to meet the provisions of regulation D-1 shall not be deemed to constitute a major conversion for the purpose of this Annex.

6 "From the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of the Convention, "from the nearest land" off the north-eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in

latitude 11°00' S, longitude 142°08' E

[1] Refer to the ISM Code adopted by the Organization by resolution A.741(18), as amended.

to a point in latitude 10°35' S, longitude 141°55' E
thence to a point latitude 10°00' S, longitude 142°00' E
thence to a point latitude 9°10' S, longitude 143°52' E
thence to a point latitude 9°00' S, longitude 144°30' E
thence to a point latitude 10°41' S, longitude 145°00' E
thence to a point latitude 13°00' S, longitude 145°00' E
thence to a point latitude 15°00' S, longitude 146°00' E
thence to a point latitude 17°30' S, longitude 147°00' E
thence to a point latitude 21°00' S, longitude 152°55' E
thence to a point latitude 24°30' S, longitude 154°00' E
thence to a point on the coast of Australia
in latitude 24°42' S, longitude 153°15' E.

7 "Active Substance" means a substance or organism, including a virus or a fungus, that has a general or specific action on or against Harmful Aquatic Organisms and Pathogens.

Regulation A-2 *General Applicability*

Except where expressly provided otherwise, the discharge of Ballast Water shall only be conducted through Ballast Water Management in accordance with the provisions of this Annex.

Regulation A-3 *Exceptions*

The requirements of regulation B-3, or any measures adopted by a Party pursuant to Article 2.3 and Section C, shall not apply to:

1 the uptake or discharge of Ballast Water and Sediments necessary for the purpose of ensuring the safety of a ship in emergency situations or saving life at sea; or

2 the accidental discharge or ingress of Ballast Water and Sediments resulting from damage to a ship or its equipment:

.1 provided that all reasonable precautions have been taken before and after the occurrence of the damage or discovery of the damage or discharge for the purpose of preventing or minimizing the discharge; and

.2 unless the owner, Company or officer in charge wilfully or recklessly caused damage; or

3 the uptake and discharge of Ballast Water and Sediments when being used for the purpose of avoiding or minimizing pollution incidents from the ship; or

4 the uptake and subsequent discharge on the high seas of the same Ballast Water and Sediments; or

5 the discharge of Ballast Water and Sediments from a ship at the same location where the whole of that Ballast Water and those Sediments originated and provided that no mixing with unmanaged Ballast Water and Sediments from other areas has occurred. If mixing has occurred, the Ballast Water taken from other areas is subject to Ballast Water Management in accordance with this Annex.

Regulation A-4 *Exemptions*

1 A Party or Parties, in waters under their jurisdiction, may grant exemptions to any requirements to apply regulations B-3 or C-1, in addition to those exemptions contained elsewhere in this Convention, but only when they are:

.1 granted to a ship or ships on a voyage or voyages between specified ports or locations; or to a ship which operates exclusively between specified ports or locations;

.2 effective for a period of no more than five years subject to intermediate review;

.3 granted to ships that do not mix Ballast Water or Sediments other than between the ports or locations specified in paragraph 1.1; and

.4 granted based on the Guidelines on risk assessment developed by the Organization.

2 Exemptions granted pursuant to paragraph 1 shall not be effective until after communication to the Organization and circulation of relevant information to the Parties.

3 Any exemptions granted under this regulation shall not impair or damage the environment, human health, property or resources of adjacent or other States. Any State that the Party determines may be adversely affected shall be consulted, with a view to resolving any identified concerns.

4 Any exemptions granted under this regulation shall be recorded in the Ballast Water record book.

Regulation A-5 *Equivalent compliance*

Equivalent compliance with this Annex for pleasure craft used solely for recreation or competition or craft used primarily for search and rescue, less than 50 metres in length overall, and with a maximum Ballast Water capacity of 8 cubic metres, shall be determined by the Administration taking into account Guidelines developed by the Organization.

SECTION B - MANAGEMENT AND CONTROL REQUIREMENTS FOR SHIPS

Regulation B-1 *Ballast Water Management Plan*

Each ship shall have on board and implement a Ballast Water Management plan. Such a plan shall be approved by the Administration taking into account Guidelines developed by the Organization. The Ballast Water Management plan shall be specific to each ship and shall at least:

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

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

3 detail the procedures for the disposal of Sediments:

.1 at sea; and

.2 to shore;

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

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

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

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

Regulation B-2 *Ballast Water Record Book*

1 Each ship shall have on board a Ballast Water record book that may be an electronic record system,

or that may be integrated into another record book or system and, which shall at least contain the information specified in Appendix II.

2 Ballast Water record book entries shall be maintained on board the ship for a minimum period of two years after the last entry has been made and thereafter in the Company's control for a minimum period of three years.

3 In the event of the discharge of Ballast Water pursuant to regulations A-3, A-4 or B-3.6 or in the event of other accidental or exceptional discharge of Ballast Water not otherwise exempted by this Convention, an entry shall be made in the Ballast Water record book describing the circumstances of, and the reason for, the discharge.

4 The Ballast Water record book shall be kept readily available for inspection at all reasonable times and, in the case of an unmanned ship under tow, may be kept on the towing ship.

5 Each operation concerning Ballast Water shall be fully recorded without delay in the Ballast Water record book. Each entry shall be signed by the officer in charge of the operation concerned and each completed page shall be signed by the master. The entries in the Ballast Water record book shall be in a working language of the ship. If that language is not English, French or Spanish the entries shall contain a translation into one of those languages. When entries in an official national language of the State whose flag the ship is entitled to fly are also used, these shall prevail in case of a dispute or discrepancy.

6 Officers duly authorized by a Party may inspect the Ballast Water record book on board any ship to which this regulation applies while the ship is in its port or offshore terminal, and may make a copy of any entry, and require the master to certify that the copy is a true copy. Any copy so certified shall be admissible in any judicial proceeding as evidence of the facts stated in the entry. The inspection of a Ballast Water record book and the taking of a certified copy shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

Regulation B-3 *Ballast Water Management for Ships*

1 A ship constructed before 2009:

.1 with a Ballast Water Capacity of between 1,500 and 5,000 cubic metres, inclusive, shall conduct Ballast Water Management that at least meets the standard described in regulation D-1 or regulation D-2 until 2014, after which time it shall at least meet the standard described in regulation D-2;

.2 with a Ballast Water Capacity of less than 1,500 or greater than 5,000 cubic metres shall conduct Ballast Water Management that at least meets the standard described in regulation D-1 or regulation D-2 until 2016, after which time it shall at least meet the standard described in regulation D-2.

2 A ship to which paragraph 1 applies shall comply with paragraph 1 not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in the year of compliance with the standard applicable to the ship.

3 A ship constructed in or after 2009 with a Ballast Water Capacity of less than 5,000 cubic metres shall conduct Ballast Water Management that at least meets the standard described in regulation D-2.

4 A ship constructed in or after 2009, but before 2012, with a Ballast Water Capacity of 5,000 cubic metres or more shall conduct Ballast Water Management in accordance with paragraph 1.2.

5 A ship constructed in or after 2012 with a Ballast Water Capacity of 5000 cubic metres or more shall conduct Ballast Water Management that at least meets the standard described in regulation D-2.

6 The requirements of this regulation do not apply to ships that discharge Ballast Water to a reception facility designed taking into account the Guidelines developed by the Organization for such facilities.

7 Other methods of Ballast Water Management may also be accepted as alternatives to the requirements described in paragraphs 1 to 5, provided that such methods ensure at least the same level of protection to the environment, human health, property or resources, and are approved in principle by the Committee.

Regulation B-4 *Ballast Water Exchange*

1 A ship conducting Ballast Water exchange to meet the standard in regulation D-1 shall:

.1 whenever possible, conduct such Ballast Water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, taking into account the Guidelines developed by the Organization;

.2 in cases where the ship is unable to conduct Ballast Water exchange in accordance with paragraph 1.1, such Ballast Water exchange shall be conducted taking into account the Guidelines described in paragraph 1.1 and as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth.

2 In sea areas where the distance from the nearest land or the depth does not meet the parameters described in paragraph 1.1 or 1.2, the port State may designate areas, in consultation with adjacent or other States, as appropriate, where a ship may conduct Ballast Water exchange, taking into account the Guidelines described in paragraph 1.1.

3 A ship shall not be required to deviate from its intended voyage, or delay the voyage, in order to comply with any particular requirement of paragraph 1.

4 A ship conducting Ballast Water exchange shall not be required to comply with paragraphs 1 or 2, as appropriate, if the master reasonably decides that such exchange would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition.

5 When a ship is required to conduct Ballast Water exchange and does not do so in accordance with this regulation, the reasons shall be entered in the Ballast Water record book.

Regulation B-5 *Sediment Management for Ships*

1 All ships shall remove and dispose of Sediments from spaces designated to carry Ballast Water in accordance with the provisions of the ship's Ballast Water Management plan.

2 Ships described in regulation B-3.3 to B-3.5 should, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of Sediments, facilitate removal of Sediments, and provide safe access to allow for Sediment removal and sampling, taking into account guidelines developed by the Organization. Ships described in regulation B-3.1 should, to the extent practicable, comply with this paragraph.

Regulation B-6 *Duties of Officers and Crew*

Officers and crew shall be familiar with their duties in the implementation of Ballast Water Management particular to the ship on which they serve and shall, appropriate to their duties, be familiar with the ship's Ballast Water Management plan.

SECTION C - SPECIAL REQUIREMENTS IN CERTAIN AREAS

Regulation C-1 *Additional Measures*

1 If a Party, individually or jointly with other Parties, determines that measures in addition to those in Section B are necessary to prevent, reduce, or eliminate the transfer of Harmful Aquatic Organisms and Pathogens through ships' Ballast Water and Sediments, such Party or Parties may, consistent with international law, require ships to meet a specified standard or requirement.

2 Prior to establishing standards or requirements under paragraph 1, a Party or Parties should consult with adjacent or other States that may be affected by such standards or requirements.

3 A Party or Parties intending to introduce additional measures in accordance with paragraph 1 shall:

.1 take into account the Guidelines developed by the Organization.

.2 communicate their intention to establish additional measure(s) to the Organization at least 6 months, except in emergency or epidemic situations, prior to the projected date of implementation of the measure(s). Such communication shall include:

.1 the precise co-ordinates where additional measure(s) is/are applicable;

.2 the need and reasoning for the application of the additional measure(s), including, whenever possible, benefits;

.3 a description of the additional measure(s); and

.4 any arrangements that may be provided to facilitate ships' compliance with the additional measure(s).

.3 to the extent required by customary international law as reflected in the United Nations Convention on the Law of the Sea, as appropriate, obtain the approval of the Organization.

4 A Party or Parties, in introducing such additional measures, shall endeavour to make available all appropriate services, which may include but are not limited to notification to mariners of areas, available and alternative routes or ports, as far as practicable, in order to ease the burden on the ship.

5 Any additional measures adopted by a Party or Parties shall not compromise the safety and security of the ship and in any circumstances not conflict with any other convention with which the ship must comply.

6 A Party or Parties introducing additional measures may waive these measures for a period of time or in specific circumstances as they deem fit.

Regulation C-2 *Warnings Concerning Ballast Water Uptake in Certain Areas and Related Flag State Measures*

1 A Party shall endeavour to notify mariners of areas under their jurisdiction where ships should not uptake Ballast Water due to known conditions. The Party shall include in such notices the precise coordinates of the area or areas, and, where possible, the location of any alternative area or areas for the uptake of Ballast Water. Warnings may be issued for areas:

.1 known to contain outbreaks, infestations, or populations of Harmful Aquatic Organisms and Pathogens (e.g., toxic algal blooms) which are likely to be of relevance to Ballast Water uptake or discharge;

.2 near sewage outfalls; or

.3 where tidal flushing is poor or times during which a tidal stream is known to be more turbid.

2 In addition to notifying mariners of areas in accordance with the provisions of paragraph 1, a Party shall notify the Organization and any potentially affected coastal States of any areas identified in paragraph 1 and the time period such warning is likely to be in effect. The notice to the Organization and any potentially affected coastal States shall include the precise coordinates of the area or areas, and, where possible, the location of any alternative area or areas for the uptake of Ballast Water. The notice shall include advice to ships needing to uptake Ballast Water in the area, describing arrangements made for alternative supplies. The Party shall also notify mariners, the Organization, and any potentially affected coastal States when a given warning is no longer applicable.

Regulation C-3 *Communication of Information*

The Organization shall make available, through any appropriate means, information communicated to it under regulations C-1 and C-2.

SECTION D - STANDARDS FOR BALLAST WATER MANAGEMENT

Regulation D-1 *Ballast Water Exchange Standard*

1 Ships performing Ballast Water exchange in accordance with this regulation shall do so with an efficiency of at least 95 percent volumetric exchange of Ballast Water.

2 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 in paragraph 1. 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*

1 Ships conducting Ballast Water Management in accordance with this regulation 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 described in paragraph 2.

2 Indicator microbes, as a human health standard, shall include:

.1 Toxicogenic *Vibrio cholerae* (O1 and O139) with less than 1 colony forming unit (cfu) per 100 millilitres or less than 1 cfu per 1 gram (wet weight) zooplankton samples;

.2 *Esc*herichia coli less than 250 cfu per 100 millilitres;

.3 Intestinal Enterococci less than 100 cfu per 100 milliliters.

Regulation D-3 *Approval requirements for Ballast Water Management systems*

1 Except as specified in paragraph 2, Ballast Water Management systems used to comply with this Convention must be approved by the Administration taking into account Guidelines developed by the Organization.

2 Ballast Water Management systems which make use of Active Substances or preparations containing one or more Active Substances to comply with this Convention shall be approved by the Organization, based on a procedure developed by the Organization. This procedure shall describe the approval and withdrawal of approval of Active Substances and their proposed manner of application. At withdrawal of approval, the use of the relevant Active Substance or Substances shall be prohibited within 1 year after the date of such withdrawal.

3 Ballast Water Management systems used to comply with this Convention must be safe in terms of the ship, its equipment and the crew.

Regulation D-4 *Prototype Ballast Water Treatment Technologies*

1 For any ship that, prior to the date that the standard in regulation D-2 would otherwise become effective for it, participates in a programme approved by the Administration to test and evaluate promising Ballast Water treatment technologies, the standard in regulation D-2 shall not apply to that ship until five years from the date on which the ship would otherwise be required to comply with such standard.

2 For any ship that, after the date on which the standard in regulation D-2 has become effective for it, participates in a programme approved by the Administration, taking into account Guidelines developed by the Organization, to test and evaluate promising Ballast Water technologies with the potential to result in treatment technologies achieving a standard higher than that in regulation D-2, the standard in regulation D-2 shall cease to apply to that ship for five years from the date of installation of such technology.

3 In establishing and carrying out any programme to test and evaluate promising Ballast Water technologies, Parties shall:

.1 take into account Guidelines developed by the Organization, and

.2 allow participation only by the minimum number of ships necessary to effectively test such technologies.

4 Throughout the test and evaluation period, the treatment system must be operated consistently and as designed.

Regulation D-5 *Review of Standards by the Organization*

1 At a meeting of the Committee held no later than three years before the earliest effective date of the standard set forth in regulation D-2, the Committee shall undertake a review which includes a determination of whether appropriate technologies are available to achieve the standard, an assessment of the criteria in paragraph 2, and an assessment of the socio-economic effect(s) specifically in relation to the developmental needs of developing countries, particularly small island developing States. The Committee shall also undertake periodic reviews, as appropriate, to examine the applicable requirements for ships described in regulation B-3.1 as well as any other aspect of Ballast Water Management addressed in this Annex, including any Guidelines developed by the Organization.

2 Such reviews of appropriate technologies shall also take into account:

.1 safety considerations relating to the ship and the crew;

.2 environmental acceptability, i.e., not causing more or greater environmental impacts than they solve;

.3 practicability, i.e., compatibility with ship design and operations;

.4 cost effectiveness, i.e., economics; and

.5 biological effectiveness in terms of removing, or otherwise rendering not viable, Harmful Aquatic Organisms and Pathogens in Ballast Water.

3 The Committee may form a group or groups to conduct the review(s) described in paragraph 1. The Committee shall determine the composition, terms of reference and specific issues to be addressed by any such group formed. Such groups may develop and recommend proposals for amendment of this Annex for consideration by the Parties. Only Parties may participate in the formulation of recommendations and amendment decisions taken by the Committee.

4 If, based on the reviews described in this regulation, the Parties decide to adopt amendments to this Annex, such amendments shall be adopted and enter into force in accordance with the procedures contained in Article 19 of this Convention.

SECTION E - SURVEY AND CERTIFICATION REQUIREMENTS FOR BALLAST WATER MANAGEMENT

Regulation E-1 *Surveys*

1 Ships of 400 gross tonnage and above to which this Convention applies, excluding floating platforms, FSUs and FPSOs, shall be subject to surveys specified below:

.1 An initial survey before the ship is put in service or before the Certificate required under regulation E-2 or E-3 is issued for the first time. This survey shall verify that the Ballast Water Management plan required by regulation B-1 and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the requirements of this Convention.

.2 A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation E-5.2, E-5.5, E-5.6, or E-5.7 is applicable. This survey shall verify that the Ballast Water Management plan required by regulation B-1 and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the applicable requirements of this Convention.

.3 An intermediate survey within three months before or after the second Anniversary date or within three months before or after the third Anniversary date of the Certificate, which shall take the place of one of the annual surveys specified in paragraph 1.4. The intermediate surveys shall ensure that the equipment, associated systems and processes for Ballast Water Management fully comply with the applicable requirements of this Annex and are in good working order. Such intermediate surveys shall be endorsed on the Certificate issued under regulation E-2 or E-3.

.4 An annual survey within three months before or after each Anniversary date, including a general inspection of the structure, any equipment, systems, fittings, arrangements and material or processes associated with the Ballast Water Management plan required by regulation B-1 to ensure that they have been maintained in accordance with paragraph 9 and remain satisfactory for the service for which the ship is intended. Such annual surveys shall be endorsed on the Certificate issued under regulation E-2 or E-3.

.5 An additional survey either general or partial, according to the circumstances, shall be made after a change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material necessary to achieve full compliance with this Convention. The survey shall be such as to ensure that any such change, replacement, or significant repair has been effectively made, so that the ship complies with the requirements of this Convention. Such surveys shall be endorsed on the Certificate issued under regulation E-2 or E-3.

2 The Administration shall establish appropriate measures for ships that are not subject to the provisions of paragraph 1 in order to ensure that the applicable provisions of this Convention are complied with.

3 Surveys of ships for the purpose of enforcement of the provisions of this Convention shall be carried

out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it.

4 An Administration nominating surveyors or recognizing organizations to conduct surveys, as described in paragraph 3 shall, as a minimum, empower such nominated surveyors or recognized organizations[2] to:

.1 require a ship that they survey to comply with the provisions of this Convention; and

.2 carry out surveys and inspections if requested by the appropriate authorities of a port State that is a Party.

5 The Administration shall notify the Organization of the specific responsibilities and conditions of the authority delegated to the nominated surveyors or recognized organizations, for circulation to Parties for the information of their officers.

6 When the Administration, a nominated surveyor, or a recognized organization determines that the ship's Ballast Water Management does not conform to the particulars of the Certificate required under regulation E-2 or E-3 or is such that the ship is not fit to proceed to sea without presenting a threat of harm to the environment, human health, property or resources such surveyor or organization shall immediately ensure that corrective action is taken to bring the ship into compliance. A surveyor or organization shall be notified immediately, and it shall ensure that the Certificate is not issued or is withdrawn as appropriate. If the ship is in the port of another Party, the appropriate authorities of the port State shall be notified immediately. When an officer of the Administration, a nominated surveyor, or a recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation, including any action described in Article 9.

7 Whenever an accident occurs to a ship or a defect is discovered which substantially affects the ability of the ship to conduct Ballast Water Management in accordance with this Convention, the owner, operator or other person in charge of the ship shall report at the earliest opportunity to the Administration, the recognized organization or the nominated surveyor responsible for issuing the relevant Certificate, who shall cause investigations to be initiated to determine whether a survey as required by paragraph 1 is necessary. If the ship is in a port of another Party, the owner, operator or other person in charge shall also report immediately to the appropriate authorities of the port State and the nominated surveyor or recognized organization shall ascertain that such report has been made.

8 In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

9 The condition of the ship and its equipment, systems and processes shall be maintained to conform with the provisions of this Convention to ensure that the ship in all respects will remain fit to proceed to sea without presenting a threat of harm to the environment, human health, property or resources.

10 After any survey of the ship under paragraph 1 has been completed, no change shall be made in the structure, any equipment, fittings, arrangements or material associated with the Ballast Water Management plan required by regulation B-1 and covered by the survey without the sanction of the Administration, except the direct replacement of such equipment or fittings.

Regulation E-2 *Issuance or Endorsement of a Certificate*

1 The Administration shall ensure that a ship to which regulation E-1 applies is issued a Certificate

[2] Refer to the guidelines adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the specifications adopted by the Organization by resolution A.789(19), as may be amended by the Organization.

after successful completion of a survey conducted in accordance with regulation E-1. A Certificate issued under the authority of a Party shall be accepted by the other Parties and regarded for all purposes covered by this Convention as having the same validity as a Certificate issued by them.

2 Certificates shall be issued or endorsed either by the Administration or by any person or organization duly authorized by it. In every case, the Administration assumes full responsibility for the Certificate.

Regulation E-3 *Issuance or Endorsement of a Certificate by Another Party*

1 At the request of the Administration, another Party may cause a ship to be surveyed and, if satisfied that the provisions of this Convention are complied with, shall issue or authorize the issuance of a Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that Certificate on the ship, in accordance with this Annex.

2 A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

3 A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as a Certificate issued by the Administration.

4 No Certificate shall be issued to a ship entitled to fly the flag of a State which is not a Party.

Regulation E-4 *Form of the Certificate*

The Certificate shall be drawn up in the official language of the issuing Party, in the form set forth in Appendix I. If the language used is neither English, French nor Spanish, the text shall include a translation into one of these languages.

Regulation E-5 *Duration and Validity of the Certificate*

1 A Certificate shall be issued for a period specified by the Administration that shall not exceed five years.

2 For renewal surveys:

.1 Notwithstanding the requirements of paragraph 1, when the renewal survey is completed within three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.

.2 When the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing Certificate.

.3 When the renewal survey is completed more than three months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

3 If a Certificate is issued for a period of less than five years, the Administration may extend the validity of the Certificate beyond the expiry date to the maximum period specified in paragraph 1, provided that the surveys referred to in regulation E-1.1.3 applicable when a Certificate is issued for a period of five years are carried out as appropriate.

4 If a renewal survey has been completed and a new Certificate cannot be issued or placed on board the ship before the expiry date of the existing Certificate, the person or organization authorized by the Administration may endorse the existing Certificate and such a Certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.

5 If a ship at the time when the Certificate expires is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the Certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No Certificate shall be extended for a period longer than three months, and a ship to which such extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new Certificate. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.

6 A Certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding five years from the date of expiry of the existing Certificate before the extension was granted.

7 In special circumstances, as determined by the Administration, a new Certificate need not be dated from the date of expiry of the existing Certificate as required by paragraph 2.2, 5 or 6 of this regulation. In these special circumstances, the new Certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

8 If an annual survey is completed before the period specified in regulation E-1, then:

.1 the Anniversary date shown on the Certificate shall be amended by endorsement to a date which shall not be more than three months later than the date on which the survey was completed;

.2 the subsequent annual or intermediate survey required by regulation E-1 shall be completed at the intervals prescribed by that regulation using the new Anniversary date;

.3 the expiry date may remain unchanged provided one or more annual surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by regulation E-1 are not exceeded.

9 A Certificate issued under regulation E-2 or E-3 shall cease to be valid in any of the following cases:

.1 if the structure, equipment, systems, fittings, arrangements and material necessary to comply fully with this Convention is changed, replaced or significantly repaired and the Certificate is not endorsed in accordance with this Annex;

.2 upon transfer of the ship to the flag of another State. A new Certificate shall only be issued when the Party issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements of regulation E-1. In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the Certificates carried by the ship before the transfer and, if available, copies of the relevant survey reports;

.3 if the relevant surveys are not completed within the periods specified under regulation E-1.1; or

.4 if the Certificate is not endorsed in accordance with regulation E-1.1.

APPENDIX I

FORM OF INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE

INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE

Issued under the provisions of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter referred to as "the Convention") under the authority of the Government of

.....

(full designation of the country)

by .....

(full designation of the competent person or organization

authorized under the provisions of the Convention)

Particulars of ship[1]

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Gross Tonnage .....

IMO number[2] .....

Date of Construction .....

Ballast Water Capacity (in cubic metres) .....

Details of Ballast Water Management Method(s) Used

Method of Ballast Water Management used .....

Date installed (if applicable) .....

Name of manufacturer (if applicable) .....

[1] Alternatively, the particulars of the ship may be placed horizontally in boxes.

[2] IMO Ship Identification Number Scheme adopted by the Organization by resolution A.600(15).

The principal Ballast Water Management method(s) employed on this ship is/are:

- ☐ in accordance with regulation D-1
- ☐ in accordance with regulation D-2

  (describe) ……
- ☐ the ship is subject to regulation D-4

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with regulation E-1 of the Annex to the Convention; and

2 That the survey shows that Ballast Water Management on the ship complies with the Annex to the Convention.

This certificate is valid until …… subject to surveys in accordance with regulation E-1 of the Annex to the Convention.

Completion date of the survey on which this certificate is based: dd/mm/yyyy

Issued at……

(Place of issue of certificate)

…… ……

(*Date of issue*) (*Signature of authorized official issuing the certificate)*

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEY(S)

THIS IS TO CERTIFY that a survey required by regulation E-1 of the Annex to the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey:

Signed .....
(Signature of duly authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

Annual*/Intermediate survey*:

Signed .....
(Signature of duly authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

Annual*/Intermediate survey*:

Signed .....
(Signature of duly authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

Annual survey:

Signed .....
(Signature of duly authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

ANNUAL/INTERMEDIATE SURVEY
IN ACCORDANCE WITH REGULATION E-5.8.3

THIS IS TO CERTIFY that, at an annual/intermediate* survey in accordance with regulation E-5.8.3 of the Annex to the Convention, the ship was found to comply with the relevant provisions of the Convention:

Signed .....
(Signature of authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN 5 YEARS WHERE REGULATION E-5.3 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation E-5.3 of the Annex to the Convention, be accepted as valid until.....

Signed .....
(Signature of authorized official)

Place .....

Date.....

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND REGULATION E-5.4 APPLIES

The ship complies with the relevant provisions of the Convention and this Certificate shall, in accordance with regulation E-5.4 of the Annex to the Convention, be accepted as valid until .....

Signed .....
(Signature of authorized official)

Place .....

Date .....

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE REGULATION E-5.5 OR E-5.6 APPLIES

This Certificate shall, in accordance with regulation E-5.5 or E-5.6* of the Annex to the Convention, be accepted as valid until ……

Signed ……
(Signature of authorized official)

Place ……

Date……

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE WHERE REGULATION E-5.8 APPLIES

In accordance with regulation E-5.8 of the Annex to the Convention the new Anniversary date is ……

Signed ……
(Signature of authorized official)

Place ……

Date……

(Seal or stamp of the authority, as appropriate)

In accordance with regulation E-5.8 of the Annex to the Convention the new Anniversary date is ……

Signed ……
(Signature of duly authorized official)

Place ……

Date……

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

APPENDIX II

FORM OF BALLAST WATER RECORD BOOK

INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

Period From: .....To: .....

Name of Ship .....

IMO number .....

Gross tonnage .....

Flag .....

Total Ballast Water capacity (in cubic metres) .....

The ship is provided with a Ballast Water Management plan ☐

Diagram of ship indicating ballast tanks:

1 Introduction

In accordance with regulation B-2 of the Annex to the International Convention for the Control and Management of Ships' Ballast Water and Sediments, a record is to be kept of each Ballast Water operation. This includes discharges at sea and to reception facilities.

2 Ballast Water and Ballast Water Management

"Ballast Water" means water with its suspended matter taken on board a ship to control trim, list, draught, stability, or stresses of a ship. Management of Ballast Water shall be in accordance with an approved Ballast Water Management plan and taking into account Guidelines[3] developed by the Organization.

3 Entries in the Ballast Water Record Book

Entries in the Ballast Water record book shall be made on each of the following occasions:

3.1 When Ballast Water is taken on board:

.1 Date, time and location port or facility of uptake (port or lat/long), depth if outside port

.2 Estimated volume of uptake in cubic metres

.3 Signature of the officer in charge of the operation.

3.2 Whenever Ballast Water is circulated or treated for Ballast Water Management purposes:

.1 Date and time of operation

.2 Estimated volume circulated or treated (in cubic metres)

[3] Refer to the Guidelines for the control and management of ships' ballast water to minimize the transfer of harmful aquatic organisms and pathogens adopted by the Organization by resolution A.868(20).

.3 Whether conducted in accordance with the Ballast Water Management plan

.4 Signature of the officer in charge of the operation

3.3 When Ballast Water is discharged into the sea:

.1 Date, time and location port or facility of discharge (port or lat/long)

.2 Estimated volume discharged in cubic metres plus remaining volume in cubic metres

.3 Whether approved Ballast Water Management plan had been implemented prior to discharge

.4 Signature of the officer in charge of the operation.

3.4 When Ballast Water is discharged to a reception facility:

.1 Date, time, and location of uptake

.2 Date, time, and location of discharge

.3 Port or facility

.4 Estimated volume discharged or taken up, in cubic metres

.5 Whether approved Ballast Water Management plan had been implemented prior to discharge

.6 Signature of officer in charge of the operation

3.5 Accidental or other exceptional uptake or discharges of Ballast Water:

.1 Date and time of occurrence

.2 Port or position of the ship at time of occurrence

.3 Estimated volume of Ballast Water discharged

.4 Circumstances of uptake, discharge, escape or loss, the reason therefore and general remarks.

.5 Whether approved Ballast Water Management plan had been implemented prior to discharge

.6 Signature of officer in charge of the operation

3.6 Additional operational procedure and general remarks

4 Volume of Ballast Water

The volume of Ballast Water onboard should be estimated in cubic metres. The Ballast Water record book contains many references to estimated volume of Ballast Water. It is recognized that the accuracy of estimating volumes of ballast is left to interpretation.

RECORD OF BALLAST WATER OPERATIONS

SAMPLE BALLAST WATER RECORD BOOK PAGE

Name of Ship: .....

Distinctive number or letters .....

Date	Item (number)	Record of operations/signature of officers in charge

Signature of master .....

2.2 IMO guidelines for the uniform implementation of the BWM Convention

RESOLUTION MEPC.152(55)
adopted on 13 October 2006

GUIDELINES FOR SEDIMENT RECEPTION FACILITIES (G1)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Article 5 of the Ballast Water Management Convention provides that, each Party undertakes to ensure that, in ports and terminals designated by that Party where cleaning or repair of ballast tanks occurs, adequate facilities are provided for the reception of sediments, taking into account the Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED, at its fifty-fifth session, the draft Guidelines for sediment reception facilities (G1) developed by the Ballast Water Working Group, and the recommendation made by the Sub-Committee on Flag State Implementation at its fourteenth session,

1. ADOPTS the Guidelines for sediment reception facilities (G1) as set out in the Annex to this resolution;

2. INVITES Governments to apply these Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep these Guidelines under review.

* * *

ANNEX

GUIDELINES FOR SEDIMENT RECEPTION FACILITIES (G1)

1 INTRODUCTION

Purpose

1.1 The purpose of these guidelines is to provide guidance for the provision of facilities for the reception of sediments that are provided in accordance with Article 5 of the Convention. The guidance is also intended to encourage a worldwide uniform interface between such facilities and the ships without prescribing dedicated shoreside reception plants.

Application

1.2 These guidelines apply to sediment reception facilities referred to in the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Convention), Article 5 and Regulation B-5.

1.3 These guidelines do not apply to sediment from tanks other than ballast water tanks.

1.4 It is recognized that some countries, areas or ports have requirements or regulations relating to the disposal of waste materials including waste material from ships which may include sediment from ships ballast water tanks. These guidelines are not intended in any way to replace or adversely impact any local or national requirements or regulations concerning the disposal and/or treatment of sediment from ships ballast water tanks.

2 DEFINITIONS

2.1 For the purposes of these guidelines, the definitions in the Convention apply and:

.1 "Ballast Water Tank" means any tank, hold or space used for the carriage of ballast water as defined in Article 1 of the Convention.

3 GENERAL REQUIREMENTS FOR RECEPTION FACILITIES

3.1 Article 5 of the Convention requires that: "reception facilities shall operate without causing undue delay to ships and shall provide for the safe disposal of such sediments that does not impair or damage their environment, human health, property or resources or those of other States."

3.2 A facility should provide the resources to enable, as far as practicable, their use by all ships wishing to discharge sediment from ballast water tanks.

3.3 Each Party shall report to the Organization and, where appropriate, make available to other Parties, information on the availability and location of any reception facilities for the environmentally safe disposal of sediments.

4 PROVISION OF SEDIMENT RECEPTION FACILITIES

4.1 When considering the requirements of these facilities many factors will have to be taken

into account, these should include but not be limited to:

.1 regional, national and local legislation which will affect the facility and related to the items below;

.2 site selection;

.3 collection, handling and transport of sediment;

.4 sampling, testing and analysis of sediment;

.5 storage of sediment and storage conditions;

.6 estimated required capacity (volume/weight) including moisture content of the sediment the facility will handle;

.7 environmental benefits and costs;

.8 proximity of available sites to local ballast tank cleaning and repair facilities;

.9 effect on the environment in construction and operation of the facility;

.10 training of facility staff;

.11 equipment required to off load sediment from ships, such as cranes;

.12 human health;

.13 safety;

.14 maintenance;

.15 operational limitations; and

.16 waterway access, approaches and traffic management.

5 TREATMENT, HANDLING AND DISPOSAL OF RECEIVED SEDIMENT

5.1 Disposal, handling and treatment measures applied to the sediment shall avoid unwanted side effects that may create a risk to or damage to the Party's environment, human health, property or resources or those of other States.

5.2 Personnel involved in the handling of sediment should be aware of the possible risk to human health associated with sediment from ships ballast water tanks. Personnel should be adequately trained and be provided with suitable personal protective clothing and equipment.

6 CAPABILITIES OF A RECEPTION FACILITY

6.1 Reception facilities should be designed, taking into account the ship types that may be anticipated to use them and consideration should be given to the requirements for ballast tank cleaning that may take place and of repair facilities in the area(s) the reception facility serves.

6.2 Details of the capabilities and any capacity limitations of reception process (facilities and equipments) should be made available to ships wishing to use the facility. The details made available to ships should include but not be limited to:

.1 maximum capacity (volume or weight) of sediment;

.2 maximum volume or weight that can be handled at any one time;

.3 packaging and labelling requirements;

.4 hours of operation;

.5 ports, berths, areas where access to the facility is available;

.6 ship-to-shore transfer details;

.7 if ship or shore crew are required for the transfer;

.8 contact details for the facility;

.9 how to request use of the facility including any notice period and what information is required from the ship;

.10 all applicable fees; and

.11 other relevant information.

7 TRAINING

7.1 Personnel in charge of and those employed in the provision of a sediment reception facility including the treatment and disposal of sediment, should have received adequate instruction. Frequent training should include but not be limited to:

.1 the purpose and principles of the Convention;

.2 the risks to the environment and human health;

.3 risk associated with the handling of sediment including both general safety and human health risks;

.4 safety;

.5 adequate knowledge of the equipment involved;

.6 a sufficient understanding of ships using the facility, and any operational constraints;

.7 the ship/port communication interface; and

.8 an understanding of local disposal controls.

7.2 The training should be organized by the manager or the operator of the reception facility and delivered by suitably qualified professionals.

RESOLUTION MEPC.173(58)
adopted on 10 October 2008

GUIDELINES FOR BALLAST WATER SAMPLING (G2)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that article 9 of the Ballast Water Management Convention provides that a ship to which the Convention applies may, in any port or offshore terminal of another Party, be subject to inspection by officers duly authorized by that Party for the purpose of determining whether the ship is in compliance with this Convention. Such an inspection is limited to, *inter alia*, a sampling of the ship's ballast water, carried out in accordance with the guidelines to be developed by the Organization,

NOTING ALSO that the International Conference on Ballast Water Management for Ships, in its resolution 1, invited the Organization to develop Guidelines for uniform application of the Convention as a matter of urgency,

HAVING CONSIDERED, at its fifty-eighth session, the draft Guidelines for ballast water sampling (G2) developed by the Ballast Water Review Group,

1. ADOPTS the Guidelines for ballast water sampling (G2) as set out in the Annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES FOR BALLAST WATER SAMPLING (G2)

1 INTRODUCTION

1.1 The objectives of these Guidelines are to provide Parties, including port State control officers, with practical and technical guidance on ballast water sampling and analysis for the purpose of determining whether the ship is in compliance with the Ballast Water Management Convention (the Convention) according to article 9 "Inspection of Ships". These Guidelines only address general technical sampling procedures, and do not address legal requirements.

1.2 These Guidelines provide general recommendations for ballast water sampling by port State control

authorities. Guidance on sampling procedures for use by Parties in assessing compliance with regulations D-1 or D-2 is given in the annex to these Guidelines.

1.3 Sampling by port State control or other authorized officers, should seek to use methods that are (a) safe to the ship, inspectors, crew and operators; and (b) simple, feasible, rapid and applicable at the point of ballast discharge.

1.4 The time needed for analysis of samples shall not be used as a basis for unduly delaying the operation, departure, or movement of the vessel. Article 12 of the Convention applies. Additionally, the use of validated automated systems for ballast water sampling and analysis should be explored when the developments of such systems are sufficiently progressed.

2 BACKGROUND

2.1 Sampling requirements for compliance control of regulations D-1 and D-2 of the Convention will differ as these two regulations have significantly different parameters. Sections 2.2 and 2.3 below reproduce the text contained in the Convention.

2.2 Ballast water exchange standard (D-1)

2.2.1 Ships performing ballast water exchange in accordance with regulation D-1 of the Convention shall do so with an efficiency of at least 95 per cent volumetric exchange of ballast water.

2.2.2 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. Pumping through less than three times the volume may be accepted provided the ship can demonstrate that at least 95 per cent volumetric exchange is met.

2.3 Ballast water performance standard (D-2)

2.3.1 Regulation D-2 of the Convention refers to two size categories of organisms and a group of indicator microbes. Ships conducting ballast water management in accordance with regulation D-2 shall discharge:

.1 less than 10 viable organisms per cubic metre greater than or equal to 50 micrometres in minimum dimension;

.2 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

.3 discharge of the indicator microbes shall not exceed:

(i) Toxicogenic *Vibrio cholerae* (O1 and O139) with less than 1 colony forming unit (cfu) per 100 millilitres or less than 1 cfu per 1 gramme (wet weight) zooplankton samples;

(ii) *Escherichia coli* less than 250 cfu per 100 millilitres; and

(iii) Intestinal *Enterococci* less than 100 cfu per 100 millilitres.

3 DEFINITIONS

3.1 For the purpose of these Guidelines, the definitions as stated in the Convention apply and:

.1 "Minimum Dimension" means the minimum dimension of an organism based upon the dimensions of that organism's body, ignoring e.g., the size of spines, flagellae, or antenna. The

minimum dimension should therefore be the smallest part of the "body", i.e. the smallest dimension between main body surfaces of an individual when looked at from all perspectives. For spherical shaped organisms, the minimum dimension should be the spherical diameter. For colony forming species, the individual should be measured as it is the smallest unit able to reproduce that needs to be tested in viability tests.

.2 "Sampling Point" means that place in the ballast water piping where the sample is taken.

.3 "Sampling Facilities" means the equipment installed to take the sample.

4 SAMPLING FOR COMPLIANCE WITH THE BALLAST WATER EXCHANGE STANDARD (REGULATION D-1)

4.1 In-tank samples may be taken via sounding or air pipes and manholes by using pumps, sampling bottles or other water containers. Samples may also be taken from the discharge line.

4.2 Sampling the ballast water on arriving ships may provide information on compliance with regulation B-4 of the Convention by analysing their physical and/or chemical parameters. However, it is difficult to use indicator (physical/chemical) parameters in isolation to conclusively prove that ballast water exchange either has or has not occurred to the D-1 Standard. As with any analytical procedures or techniques used to test for compliance with regulation B-4, methods used to test for compliance with ballast water exchange requirements should be rigorously validated and widely distributed through the Organization.

5 SAMPLING FOR COMPLIANCE WITH THE BALLAST WATER PERFORMANCE STANDARD (REGULATION D-2)

5.1 Although the Convention contains no requirements for provision of sampling points, the Guidelines for approval of ballast water management systems (G8) adopted by resolutionMEPC.174(58) do expressly call for the provision of sampling facilities, not only for the purpose of type approval, but also for the purpose of these ballast water sampling Guidelines (refer to paragraphs 3.2, 3.8, and section 8 of the Guidelines for approval of ballast water management systems (G8) for further detail regarding provision of sampling facilities).

5.2 Samples should be taken from the discharge line, as near to the point of discharge as practicable, during ballast water discharge whenever possible.

5.3 In cases where the ballast system design does not enable sampling from the discharge line, other sampling arrangements may be necessary. Sampling via manholes, sounding pipes, or air pipes is not the preferred approach for assessing compliance with regulation D-2. Scientific trials have shown that using these sampling locations may not provide accurate estimates of organism concentrations that would occur in the discharge, i.e. such sampling may provide an under- or over-estimate of the concentration of organisms.

5.4 In-tank sampling should only be used if ballast water treatment occurs on uptake prior to or whilst ballast water is in the tank. If any part of the treatment process occurs during the ballast water discharge, then in-tank sampling will be inappropriate.

5.5 In light of these potential shortcomings, sampling to determine compliance with regulation D-2 should, whenever practicable to do so, be carried out in the discharge line near the discharge point.

5.6 An exception to this is the case when tanks are emptied through direct overboard discharge valves, as in upper side wing tanks, rather than through the ballast pumps. In such cases, tank sampling may be an appropriate approach.

6 BALLAST WATER SAMPLING AND ANALYSIS

6.1 In accordance with article 9 of the Convention, a Party may sample the ship's ballast water for the purpose of determining whether the ship is in compliance with the Convention in accordance with these Guidelines.

6.2 Any sampling protocol for testing of compliance with the Convention should observe the following principles to help ensure consistency of approach between Parties and to provide certainty to the shipping industry:

.1 the sampling protocol should be in line with these Guidelines;

.2 the sampling protocol should result in samples that are representative of the whole discharge of ballast water from any single tank or any combination of tanks being discharged;

.3 the sampling protocol should take account of the potential for a suspended sediment load in the discharge to affect sample results;

.4 the sampling protocol should provide for samples to be taken at appropriate discharge points;

.5 the quantity and quality of samples taken should be sufficient to demonstrate whether the ballast water being discharged meets with the relevant standard;

.6 sampling should be undertaken in a safe and practical manner;

.7 samples should be concentrated to a manageable size;

.8 samples should be taken, sealed and stored to ensure that they can be used to test for compliance with the Convention;

.9 samples should be fully analysed within test method holding time limit using an accredited laboratory; and

.10 samples should be transported, handled and stored with the consideration of the chain of custody.

6.3 Prior to testing for compliance with the D-2 standard, it is recommended that, as a first step, an indicative analysis of ballast water discharge may be undertaken to establish whether a ship is potentially compliant or non-compliant. Such a test could help the Party identify immediate mitigation measures, within their existing powers, to avoid any additional impact from a possible non-compliant ballast water discharge from the ship.

6.4 In emergency or epidemic situations, port States may use alternative sampling methods which may need to be introduced at short notice and should endeavour to communicate these to ships entering ports under their jurisdiction. Although in such situations they may not necessarily notify the Organization, such notification could be beneficial for other Parties.

6.5 Alternative sampling measures instigated as a result of paragraph 6.4 should give due cognizance to the requirements of article 12 of the Convention.

6.6 Given the complexity in ballast water sampling and analysis, it is likely that new approaches will be developed for ballast sampling and analyses of the composition, concentration, and viability of organisms. Administrations are encouraged to share information concerning methods for the analysis of ballast water samples, using existing scientific reports, and papers distributed through the Organization.

6.7 The Organization should make available, through any appropriate means, information communicated to it regarding ballast water sampling and analysis.

6.8 Further guidance on the interpretation of the results arising from sample analysis will be developed by the Organization in due course.

* * *

Annex

This annex provides practical recommendations regarding sampling techniques and procedures for use by Member States and port State control and other authorized officers assessing compliance with regulation D-1 or D-2.

PART 1 - SAMPLING FROM THE BALLAST WATER DISCHARGE LINE

PART 2 - SAMPLING FROM BALLAST WATER TANKS

PART 3 - SAMPLING AND ANALYSIS PROTOCOLS

PART 4 - SAMPLE DATA FORMS

PART 5 - HEALTH AND SAFETY ASPECTS

PART 6 - RECOMMENDATION FOR A PORT STATE CONTROL BALLAST WATER SAMPLING KIT

PART 7 - MAINTENANCE, STORAGE, LABELLING AND TRANSPORTATION

PART 8 - CHAIN OF CUSTODY RECORD

PART 1 – SAMPLING FROM THE BALLAST WATER DISCHARGE LINE

1 The advantage in sampling the biota present in the ballast water discharge line is that this is most likely to accurately represent the concentration of substances and organisms in the actual discharge, which is of primary concern in assessing compliance with the discharge regulations.

2 The disadvantages of this method are that, on most ships, in-line sampling should be carried out in the engine room, where space may be limited, and the handling of water once the samples were concentrated may be impracticable.

3 In order to undertake an accurate measurement on the organism concentration in the ballast water, it is recommended to install an "isokinetic" sampling facility. Isokinetic sampling is intended for the sampling of water mixtures with secondary immiscible phases (i.e. sand or oil) in which there are substantial density differentials. In such conditions, convergence and divergence from sampling ports is of significant concern. Since most organisms are relatively neutrally buoyant, true isokinetic sampling is unnecessary. However, the mathematics related to isokinetic sampling are deemed to be useful as a basis for describing and specifying sampling geometries. Isokinetic sampling is necessary to ensure that a sample contains the same proportions of the various flowing constituents as the flow stream being sampled. During isokinetic sampling the sampling device does not alter the profile or velocity of the flowing stream at the moment or point at which the sample is separated from the main flow stream. Under isokinetic conditions, the velocities of both the sample and the main flow are equal at the point at which the sample is separated from the main flow. To achieve isokinetic sampling conditions, a sampler is designed to separate a subsection of the total flow-stream in a manner that does not encourage or discourage water entry other than that which is

otherwise in the cross-section of the sampler opening. In other words, flow streams in the main flow of the pipe should not diverge or converge as they approach the opening of the sampler.

4 Technical specifications for design of in-line sampling facilities

4.1 Through computational fluid dynamics modelling, it has been shown that the isokinetic diameter calculation can provide guidance for sizing of sample ports for sampling of organisms.
Simulations showed that flow transitions from the main stream were best for sample port diameters between 1.5 and 2.0 times the isokinetic diameter. Ports sized in this range had smooth transitions and pressure profiles that allowed for direct sampling without the need of a pump to induce sample collection. The isokinetic sample port diameter should therefore be determined generally according to the equation:

$$Diso = Dm\sqrt{Qiso/Qm}$$

where Diso and Dm are the diameters of the sample port opening and the main flow in the discharge line, respectively; and Qiso and Qm represent the respective volumetric flow rates through the two pipes. It is recommended that sample port size be based on the combination of maximum sample flow rate and minimum ballast flow rate that yields the largest isokinetic diameter.

4.2 The opening of the sampling pipe should be chamfered to provide a smooth and gradual transition between the inside and outside pipe diameters.

4.3 The length of the straight sample pipe facing into the flow can vary, but should not usually be less than one diameter of the sampling pipe. The sampling port should be oriented such that the opening is facing upstream and its lead length is parallel to the direction of flow and concentric to the discharge pipe which may require sampling pipes to be "L" shaped with an upstream facing leg if installed along a straight section of discharge pipe.

4.4 The need to be able to service the sample pipe is important and should be considered, taking the safety of ship into consideration. Therefore, the sampling pipe should be retrievable either manually, or mechanically, or it should be in a system which can be isolated. Because of the potential for the opening and interior of the sample pipe to become occluded by biological or inorganic fouling, it is recommended that samplers be designed to be closable at the opening, removed between sampling intervals or be easily cleaned prior to sampling.

4.5 The sample pipe and all associated parts of the sampler that come into contact or near proximity with the ballast piping should be constructed of galvanically compatible materials and generally corrosion resistant. Any corrosion of the sampling system will affect sample flow rates and potentially sample representativeness.

4.6 If flow control of the sample flow rate is required, ball, gate and butterfly valve types should be avoided as they may cause significant shear forces which may result in organism mortality. For flow control, it is recommended that diaphragm valves or similar valve types be used to minimize sharp velocity transitions. For flow distribution, ball valves may be utilized in such a manner that they are either fully open or fully closed.

5 Technical specifications for installation of a sample point in the ballast water discharge line

5.1 The sample taken should be removed from the main pipeline at a location where the flowing stream at the sample point is representative of the contents of the stream. The sample facility should be placed at a point where the flow in the main pipe is fully mixed and fully developed.

5.2 The sampling point should be installed in a straight part of the discharge line as near to the ballast water discharge overboard as practicable. The sampling facility should be positioned such that a representa-

tive sample of ballast water is taken. It is recommended that the position of the sample point is established using methods such as computational fluid dynamics.

PART 2 – SAMPLING FROM BALLAST WATER TANKS

1 In-tank sampling may be appropriate for assessing D-1 compliance. There may be circumstances when in-tank sampling to provide an indication of compliance or non-compliance with the ballast water performance standard D-2 may be found appropriate. D-2 compliance should be assessed at ballast water discharge, whenever this is possible.

2 Manholes

2.1 Sampling of ballast water via manholes allows direct access to ballast tanks and ballast holds.

2.2 The disadvantages of this type of sampling access include the need for opening and closing manholes and hatches. Further, overlaying cargo may prevent access for sampling. Also, hatches and horizontal openings inside tanks are not aligned one below the other, which means that although the tank may have three or more decks, only the top deck may be accessible for sampling. Further, in some ships, access hatches and vertical openings are on the side of the tank and thus are not accessible unless the tank is empty. Another disadvantage is ladders and platforms may inhibit access to the full depth of the tank. Sampling from some certain parts of the ballast water tank may result in a lack of representation of the whole ballast water discharge.

2.3 Samples should be collected using scientific sampling equipment including plankton nets and pumps, as appropriate, for the sampling and analytical method intended for use.

2.4 Whenever possible samples should be taken from multiple water depths inside the ballast tank.

2.5 When employing plankton nets:

.1 the sample should be taken in a vertical net haul from the deepest sampling point accessible in the tank;

.2 all plankton nets should be lowered to the maximum accessible depth inside the ballast tank and retrieved at a speed of approximately 0.5 m/s; and

.3 multiple vertical net hauls may be needed to meet the required sample volume. The water volume sampled may be measured by flow meters in the opening of the net or by noting the sampling depth and net opening diameter.

2.6 When employing pumps:

.1 pump intake pipes should be lowered to multiple depths (if possible) for different samples to obtain a vertical sample; and

.2 the water volume sampled may be measured by flow meters in the hose or by using larger containers to measure the pumped water volume.

3 Sounding pipes or air pipes

3.1 Sampling by sounding pipes, when available, could be appropriate due to accessibility. However, there are some limitations when using this point to test for compliance. The use of sounding pipes will be more effective when the ship's sounding pipes are perforated along their length, ensuring better mixing of ballast water and that within the sounding tube. However, care must be taken if initial water samples from a sounding pipe indicate no or insufficient exchange even though the ship's records document otherwise. Experience has shown that in some cases water within unperforated sounding pipes is not affected during

an exchange. This may occur during flow-through because the water in pipes is not exposed to the mixing within the tank. This may also occur during empty refill when water in the sounding pipes is held within the pipe by vacuum pressure while the tanks are drained and then filled.

3.2 Samples should be collected using scientific sampling equipment as appropriate.

4 Use of pumps

4.1 Pumps of various types may be used to sample via sounding or air pipes.

4.1.1 The use of pumps may be limited by inability to overcome the pumping head, i.e. when the vertical distance from the pump to the water level in tank exceeds 10 metres, suction pumps cannot be used.

4.1.2 Pump intake pipes should be lowered to multiple depths (if possible) for different samples to obtain a vertical sample. The water volume sampled may be measured by flow meters in the hose or by using larger containers to measure the pumped water volume.

4.2 In principle, intrinsically safe pumps should be used in all circumstances.

4.3 Pumps that do not contribute to the mortality of organisms should be preferred.

PART 3 – SAMPLING AND ANALYSIS PROTOCOLS

1 The sample volume and number of samples required will depend upon:

.1 the objective of sampling, e.g., to determine the number of organisms in different size classes; to assess the viability of organisms in different size classes; or to assess compliance with the D-1 or D-2 standard;

.2 the specific analytical method to be used; and

.3 the statistical significance and certainty required.

2 Sample handling and storage will also vary depending on the objectives and specific analytical methods. In particular the way the sample is taken (e.g., net or pump) and the conditions in which it is stored (e.g., light, temperature, storage container) should be appropriate for the analytical method used.

3 Sample analysis methods are rapidly developing and the best available procedures should be used consistently with availability.

4 The sampling and analysis methodologies to test for compliance with the Convention are still in development. Although significant technical advances and refinements have been made in these areas since the adoption of the Convention, there are still numerous issues to be resolved. Administrations are still undertaking research to define the most appropriate methods to test for compliance, and the best way to take, handle and analyse samples.

5 At the present time, there are no specific sampling or analysis protocols that can be recommended for Administrations to use. However, it is expected that in due course this information is likely to become available once full compliance testing regimes are developed and Administrations have had time to gain experience and develop best practice in ballast water sampling and analysis.

6 An IMO circular will be developed as a high-priority matter, to provide sampling and analysis protocols to be followed and give advice on the uniform application of these protocols. Such a circular will be updated when new protocols are developed.

7 To aid this process, Administrations are requested to supply information on any scientifically validated sampling and analysis techniques to the Organization, as soon as possible.

PART 4 – SAMPLE DATA FORM

The following minimum information is recommended for sample documentation:

Sampling date	
Ship particulars	**Name of ship:** Distinctive number or letters Port of registry: Gross tonnage: IMO Number: Date of construction: Ballast water capacity:
Identification of sampled tank*	
Type and position of sampled tank*	
Capacity of sampled tank*	(m^3)
Type of ballast water management undertaken	(type of exchange or treatment)
Make of ballast water management system	
Date of ballast water management undertaken	
Sample identification code	(including number of replicate)
Sample type	(larger, smaller plankton, microbes)
Sampling techniques used	net (including depth of vertical net haul, net opening size, mesh size) pumps (including sampling depth, pumping capacity in l/min.) bottle (incl. sampling depth, bottle capacity in l.) specify other sampling technique if used
Sampling time/start	
Sampling end time	
Origin of water sampled*	(lat/lon/port)
Type of sampling access point	
Location of sampling access point	
Water volume sampled	(by volume)
In case sample is concentrated on board specify filter or net sizes (if applicable)	(µm)
Preservative (if used)	
Transport to laboratory	cooling container, dark storage, etc.
Sample results	

* If appropriate.

Other information as necessary should be included in the table.

PART 5 – HEALTH AND SAFETY ASPECTS

1 As shipboard and port State control procedures on health and safety aspects already exist there is no need to develop new procedures for the purpose of ballast water sampling. In general, ship procedures, especially for entry into enclosed spaces, shall be followed if more stringent than national regulations. However, the following paragraphs provide some additional guidance.

2 Worker health and safety should be a primary consideration during all the sampling operations as ships and ports are hazardous environments in which to work. Any sampling operation should be undertaken after consideration of the specific risks associated with the ballast water being sampled. Appropriate personal protective equipment connected with the work should be worn as necessary.

3 In the event sampling involves entry into confined spaces, Recommendations for entering enclosed spaces aboard ships (resolution A.864(20)) and relevant IACS Recommendations on confined space safe practice (www.iacs.org.uk), and standard industry practice on man entry into enclosed spaces should be consulted (e.g., ISGOTT).

4 All electrical equipment, including torches, should be intrinsically safe for use on board ships when required. Safety limitations on the use of mobile telephones, etc., should always be observed. Standard industry practice on the use of electrical equipment including mobile telephone should be consulted (e.g., ISGOTT).

5 All electrical equipment to be used aboard should be checked to ensure that it is intrinsically safe. Pumps in particular should be fitted with waterproof junctions at the point where the electrical lead passes into the pump body and all plugs should be waterproof with rubber casings. If there is any doubt about an electrical supply or equipment aboard a vessel, advice from the ship's master or a member of the port company electrical staff should be sought.

PART 6 – RECOMMENDATION FOR A PORT STATE CONTROL BALLAST WATER SAMPLING KIT

1 The sampling kit for discharge line sampling should in minimum consist of:

- net or sieve to concentrate sample (with replacement material of identical mesh size);
- at least two containers to measure water volume extracted from discharge line. The container is further needed to collect sieved water for rinsing sieve or net when sampling is completed;
- water appropriate for rinsing net or sieve;
- funnel to ease filling of sample container;
- sample containers including sterile containers for microbial analysis;
- all necessary forms including sample data reporting/chain of custody forms;
- toolkit to enable net or sieve replacement, etc.;
- tape to seal the sample jar lid to the jar; and
- first aid kit.

2 The sampling kit for manhole sampling should in minimum consist of:

- plankton net with an associated flow meter – scientific trials have shown that plankton nets equipped with a cone shaped opening and filtering cod-end provide the most accurate samples. Nets to be lowered down into the tank should further not exceed 1 m in length and 30

cm in diameter to reduce the risk to become entangled inside the tank. Aspare net including an extra cod end should be added to the sampling kit in case damages occur. A weight (minimum 1 kg) should be used to keep the wire vertical during the net haul;

- rope to lower down net (the rope should be metered to document net haul depth);
- net or sieve to concentrate sample (with replacement material of identical mesh size) spare sieves with identical mesh size should be added to the sampling kit in case damages occur;
- collecting sieved water for rinsing sieve and plankton net when sampling is completed;
- water bottle to rinse net or sieve;
- funnel to ease filling of sample container;
- sample containers including sterile containers for microbial analysis;
- all necessary forms including sample data reporting/chain of custody forms;
- toolkit to enable net or sieve replacement, etc.;
- tape to seal the sample jar lid to the jar; and
- first aid kit.

3 The sampling kit for sounding or air pipe sampling should in minimum consist of:

- pump (e.g., suction, power or air driven);
- hose (optional with weight to ease lowering down the hose);
- net or sieve to concentrate sample (with replacement material of identical mesh size);
- at least two containers to measure water volume pumped on deck. The container is further needed to collect sieved water for rinsing sieve when sampling is completed and to rinse hose;
- water bottle to rinse net or sieve;
- funnel to ease filling of sample container;
- sample containers including sterile containers for microbial analysis;
- all necessary forms including sample data reporting/chain of custody fo rms;
- toolkit to enable net or sieve replacement, opening of sounding or air pipes, etc.;
- tape to seal the sample jar lid to the jar; and
- first aid kit.

PART 7 – MAINTENANCE, STORAGE, LABELLING AND TRANSPORTATION

1 Samples should be handled and stored as appropriate for the intended analytical method. The sample collection data form and chain of custody record should be kept with each individual sample.

2 Sample Sealing: Tape should be used to seal the sample jar lid to the jar.

3 Sample data forms: Prior to the beginning of the sampling programme, a suitable set of recording forms based on part 4 should be designed which incorporate all the sample information required to meet the aims of the programme. Details of each sample should be entered on the forms as soon as practicable.

4 Labelling of sample containers: Each sample container should be labelled by, e.g., using a water-proof permanent marker and additional vegetal paper which may be deposited inside the sample container, if appropriate. The information recorded should include but not be limited to the date, ship name, sample identification code, tank numbers and preservative if used. Codes may be used for some of these details as long as they are included on the sample data forms.

PART 8 – CHAIN OF CUSTODY RECORD

1 In the context of compliance control, it is advisable to maintain chain of custody records for the samples collected.

2 Information to be included should contain a complete record of those handling the sample from the time of the sampling onwards.

3 The chain of custody should also include date, ship identification, sample identification code, and a list of people who have handled the sample, including the person who takes the sample, dates and time, and the reason for sample transfer and the integrity of the sample on transfer.

RESOLUTION MEPC.123(53)
adopted on 22 July 2005

GUIDELINES FOR BALLAST WATER MANAGEMENT EQUIVALENT COMPLIANCE (G3)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Regulation A-5 of the Annex to the Ballast Water Management Convention provides that equivalent compliance with its provisions for pleasure craft used solely for recreation or competition or craft used primarily for search and rescue, less than 50 metres in length overall, and with a maximum Ballast Water capacity of 8 cubic metres, shall be determined by the Administration taking into account Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invites the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED the draft Guidelines for ballast water management equivalent compliance developed by the Ballast Water Working Group and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its ninth session,

1. ADOPTS the Guidelines for ballast water management equivalent compliance, as set out in the annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES FOR BALLAST WATER MANAGEMENT EQUIVALENT COMPLIANCE (G3)

1 Administrations shall take these Guidelines into account in determining whether ships satisfy the requirements of *Regulation A-5, Equivalent compliance* of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004. Ships subject to these Guidelines should, insofar as practicable, comply with the Convention, and if that is not practicable, shall achieve equivalent compliance in accordance with Regulation A-5 and these Guidelines.

Definitions

2 For the purpose of these Guidelines the definitions in the Convention apply.

Application

3 These Guidelines apply to pleasure craft used solely for recreation or competition or craft used primarily for search and rescue less than 50 metres in overall length and with a maximum ballast water capacity of eight cubic metres. Overall length means the length of the hull excluding bowsprits, booms, bumpkins, pulpits, etc.

Exceptions

4 These Guidelines do not apply to the uptake or discharge of ballast water and sediments:

.1 necessary for the purpose of ensuring the safety of a ship in emergency situations or saving life at sea;

.2 when being used for the purpose of avoiding or minimizing pollution incidents from the ship; and

.3 on the high seas of the same ballast water and sediments.

5 In addition, these Guidelines do not apply to:

.1 the accidental discharge or ingress of ballast water and sediments resulting from damage to a ship or its equipment provided that all reasonable precautions have been taken before and after the occurrence of the damage or discovery of the damage or discharge for the purpose of preventing or minimizing the discharge and the owner or the person in charge did not wilfully cause such damage;

.2 the discharge of ballast water and sediments from a ship at the same location where the whole of that ballast water and those sediments originated provided that no mixing with unmanaged ballast water from other areas has occurred. In the context of these Guidelines, "same location" shall be taken to mean the same harbour, mooring or anchorage; and

.3 the discharge of ballast water and sediments if the master reasonably decides that compliance with these Guidelines would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition.

Precautionary practices to minimize the uptake or transfer of harmful aquatic organisms and pathogens

Uptake of ballast water

6 Wherever possible, ballast water should be taken up outside of port waters and as far from the coast as practicable. In addition, consideration should be given to the use of dockside water supplies (e.g. water not taken directly from the harbour; such as fresh water, potable water, etc.) as the source for ballast water.

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

.1 in areas identified by the port State in connection with warnings provided by ports concerning ballast uptake and any other port contingency arrangements in the event of emergency situations;

.2 in darkness when organisms may rise up in the water column;

.3 in very shallow water;

.4 where propellers may stir up sediment;

.5 areas with current large phytoplankton blooms (algal blooms, such as red tides);

.6 nearby sewage outfalls;

.7 where a tidal stream is known to be more turbid;

.8 where tidal flushing is known to be poor; or

.9 in areas close to aquaculture.

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

Discharge of ballast water

9 To prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens to the maximum extent practicable taking into account the nature of the ship Ballast Water should either be exchanged prior to discharge in accordance with Regulation B-4 or otherwise managed in accordance with the requirements of the Administration. Any chemical treatment shall only use Active Substances approved by the Organization pursuant to Regulation D-3 of the Convention.

Sediment control

10 Where practicable, routine cleaning of the ballast tank to remove sediments should be carried out under controlled arrangements, and suitable arrangements made for the environmentally sound disposal of any resulting sediments.

Compliance with other guidelines

11 Nothing in these Guidelines shall prevent a ship to which these Guidelines apply from using any method of Ballast Water Management approved under any other Guidelines issued by the Organization. If suitable new and emergent treatments and technologies prove viable, these should be evaluated with a view to be incorporated, as appropriate, into these Guidelines.

RESOLUTION MEPC.127(53)
adopted on 22 July 2005

GUIDELINES FOR BALLAST WATER MANAGEMENT AND DEVELOPMENT OF BALLAST WATER MANAGEMENT PLANS (G4)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Regulation B-1 of the Annex to the Ballast Water Management Convention provides that each ship shall have on board and implement a ballast water management plan approved by the Administration, taking into account Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invites the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED the draft Guidelines for ballast water management and development of ballast water management plans developed by the Ballast Water Working Group and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its ninth session,

1 ADOPTS the Guidelines for ballast water management and development of ballast water management plans, as set out in the Annex to this resolution;

2 INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3 AGREES to keep the Guidelines under review.

* * *

ANNEX

DRAFT GUIDELINES FOR BALLAST WATER MANAGEMENT AND THE DEVELOPMENT OF BALLAST WATER MANAGEMENT PLANS (G4)

1 INTRODUCTION

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

1.2 The selection of appropriate methods of ballast water management should take into account the need ensure that Ballast Water Management practices used to comply with this Convention do not cause

greater harm than they prevent to the environment, human health, property or resources of any States and the safety of ships.

1.3 The objectives of these Guidelines are to assist Governments, appropriate authorities, ships masters, operators and owners, and port authorities, as well as other interested parties, in preventing, minimizing and ultimately eliminating the risk of introducing harmful aquatic organisms and pathogens from ships' ballast water and associated sediments while protecting ships' safety in applying the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter referred to as the "Convention").

1.4 These guidelines consist of two parts:

Part A – "Guidelines for Ballast Water Management", which contains guidance on the general principles of Ballast Water Management; and

Part B – "Guidelines for the development of Ballast Water Management Plans", which contains guidance on the structure and content of Ballast Water Management Plans required by Regulation B-1 of the Convention.

2 DEFINITIONS

2.1 For the purposes of these Guidelines, the definitions in the Convention apply.

2.2 Ballast Water Tank means any tank, hold, or space used for the carriage of ballast water.

3 APPLICATION

3.1 The Guidelines apply to all ships and to Flag Administrations, port States, coastal States, ship owners, ship operators, ships' personnel involved in Ballast Water Management, ship designers, ship builders, classification societies as well as other interested parties.

PART A – GUIDELINES FOR BALLAST WATER MANAGEMENT

1 SHIP OPERATIONAL PROCEDURES

1.1 Precautionary practices

Avoiding unnecessary discharge of ballast water

1.1.1 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.

1.1.2 Managed ballast water which is mixed with unmanaged ballast water is no longer in compliance is no longer in compliance with Regulations D-1 and D-2 of the Annex to the Convention.

Minimizing the uptake of harmful aquatic organisms, pathogens and sediments

1.1.3 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:

.1 in areas identified by the port State in connection with advice provided by ports under paragraph 2.2.2;

.2 in darkness when organisms may rise up in the water column;

.3 in very shallow water;

.4 where propellers may stir up sediment; or

.5 where dredging is or recently has been carried out.

1.2 Ballast water management options

1.2.1 Ballast Water Exchange

1.2.1.1 Ballast water exchange is to be conducted in accordance with Regulation B-4 of the Convention and in accordance with the Guidelines for Ballast Water Exchange.

1.2.1.2 The voyage should be planned taking into account when ballast water exchange in accordance with Regulation B–4 of the Convention can be carried out.

1.2.1.3 Because of the possibility that partially exchange may encourage re-growth of organisms, ballast water exchange should only be commenced in any tank if there is sufficient time to complete the exchange to comply with the standard in Regulation D-1 and the ship can comply with the distance from land and minimum water depth criteria in Regulation B-4. As many complete tanks should be exchanged to the standard in Regulation D-1 as the time allows, if for any tank the standard in Regulation D-1 can not be fully met the exchange should not be commenced for that tank.

1.2.1.4 If ballast water exchange is not undertaken for the reasons in Regulation B-4.4, i.e. if the master reasonably decides that such exchange would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition, then details of the reasons ballast water exchange was not undertaken are to be recorded in the Ballast Water Record Book.

1.2.1.5 A port State may designate areas in which exchange may be conducted taking into account the Guidelines on designation of areas for ballast water exchange. Designated areas should only be used for those ballast water tanks that are intended to be discharged in the port of that State and that could not be exchanged in accordance with Regulation B-4.1 of the Convention.

1.2.2 Ballast Water Management Systems

1.2.2.1 Ballast Water Management Systems installed for compliance with Regulation B-3 are to be approved in accordance with Regulation D-3. Such systems are to be operated in accordance with the system design criteria and the manufacture's operational and maintenance instructions. The use of such systems should be detailed in the ship's Ballast Water Management Plan. All failures and malfunctions of the system are to be recorded in the Ballast Water Record Book.

1.2.3 Discharge to ballast water reception facilities

1.2.3.1 If ballast water reception facilities provided by a port State are utilized, Regulation B-3.6 applies.

1.2.4 Prototype ballast water treatment technologies

1.2.4.1 Prototype ballast water treatment technologies should be used within a programme approved by the Administration in accordance with Regulation D-4.

1.3 Sediment management

1.3.1 Regulation B-5 requires that all ships shall remove and dispose of sediments from spaces designated to carry ballast water in accordance with the ballast water management plan.

1.3.2 All practical steps should be taken during ballast uptake to avoid sediment accumulation, however, it is recognized that sediment will be taken on board and will settle on tank surfaces. When sediment has accu-

mulated, consideration should be given to flushing tank bottoms and other surfaces when in suitable areas, i.e. areas complying with the minimum depth and distance described by Regulations B-4.1.1 and B-4.1.2.

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

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

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

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

1.3.7 Regulation B-5 requires that ships constructed in or after 2009 should, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of sediments, facilitate removal of sediments, and provide safe access to allow for sediment removal and sampling, taking into account the Guidelines for sediments control on ships (G12). This also applies to ships constructed prior to 2009, to the extent practicable.

1.4 Additional Measures

1.4.1 Ships to which additional measures apply, under Regulation C-1, should take them into account in the ships voyage planning. Actions taken to comply with any additional measures should be recorded in the Ballast Water Record Book.

1.5 Exemptions

1.5.1 Regulation A-4 provides that an exemption may be granted from the requirements of Regulations B-3 or C-1 by a Party or Parties to a ship in specific circumstances. Applications for and the granting of such exemptions should be completed in accordance with the Guidelines for risk assessment (G7).

1.5.2 Ships granted an exemption referred to in paragraph 1.5.1 above should record the exemption in the Ballast Water Record Book and what actions have been taken with regards to the ships ballast water.

2 RECORDING PROCEDURES

2.1 Procedures for ships

2.1.1 To facilitate the administration of ballast water management and treatment procedures on board each ship, a responsible officer is to be designated in accordance with Regulation B-1 to ensure the maintenance of appropriate records and to ensure that ballast water management and/or treatment procedures are followed and recorded.

2.1.2 When carrying out any ballast water operation the details are to be recorded in the Ballast Water Record Book together with any exemptions granted in accordance with Regulation B-3 or C-1.

2.1.3 Where a port State requires information on ships ballast operations, relevant documentation, which takes account of the information requirements of the Convention, should be made available to the port State.

2.2 Procedures for port States

2.2.1 Port States should provide ships with details of their requirements concerning ballast water management including:

.1 the location and terms of use of areas designated for ballast water exchange under Regulation B-4.2 of the Convention;

.2 any additional measures determined under Regulation C-1 of the Convention;

.3 warnings concerning ballast uptake and any other port contingency arrangements in the event of emergency situations; and

.4 the availability, location, capacities of reception facilities that are provided for the environmentally safe disposal of ballast water and/or sediments, under Article 5 and Regulation B-3.6.

2.2.2 To assist ships in applying the precautionary practices described in section 1.1 of Part A, port States are required by Regulation C-2 of the Convention to endeavour to notify mariners of area(s), where ships should not uptake Ballast Water due to known conditions. Similar notification should be given for areas where the uptake of ballast water should be minimized, such as:

.1 areas with outbreaks, infestations or known populations of harmful organisms and pathogens;

.2 areas with current phytoplankton blooms (algal blooms, such as red tides);

.3 nearby sewage outfalls;

.4 areas where a tidal stream is known to be the more turbid;

.5 areas where tidal flushing is known to be poor;

.6 nearby dredging operations; and

.7 nearby or in sensitive or estuarine sea areas.

3 TRAINING AND EDUCATION

3.1 Regulation B-6 requires that officers and crew shall be familiar with their duties in the implementation of Ballast Water Management particular to the ship on which they serve. Owners, managers, operators, and others involved in officer and crew training for ballast water management should consider the following:

3.2 Training for ships' masters and crews as appropriate should include instructions on the requirements of the Convention, the ballast water and sediment management procedures and the Ballast Water Record Book particularly having regard to matters of ship safety and maintenance of records in accordance with the information contained in these Guidelines.

3.3 The Ballast Water Management Plan should include training and education on ballast water management practices and the systems and procedures used on board the ship.

PART B – GUIDELINES FOR THE DEVELOPMENT OF BALLAST WATER MANAGEMENT PLANS

1 INTRODUCTION

1.1 These Guidelines have been developed to assist with the preparation of a ship's Ballast Water Management Plan (hereafter referred to as the "Plan"). The Plan must be approved by the Administration in

accordance with Regulation B-1 of the Convention.

1.2 This Part is comprised of three primary sections:

.1 General: this section provides the objectives and a general overview of the subject matter and introduces the reader to the basic concept of the Guidelines and the Plan that is expected to be developed from them. This section also contains guidance on updating and use of the Plan.

.2 Mandatory provisions: this section provides guidance to ensure that the mandatory provisions of Regulation B-1 of the Annex to the Convention are met.

.3 Non-mandatory provisions: this section provides guidance concerning the inclusion of other information in the Plan. This information, although not required under Regulation B-1 of the Convention, may be found useful by local authorities in ports visited by the ship, or may provide additional assistance to the ship's master.

1.3 The format for a Ballast Water Management Plan is given in Appendix 1.

2 GENERAL

2.1 Concept of the Guidelines

2.1.1 These Guidelines are intended to provide a basis for the preparation of the Plans for individual ships. The broad spectrum of ships for which Plans are required makes it impractical to provide specific guidelines for each ship type. For a Plan to be effective and to comply with Regulation B-1 of the Annex of the Convention, it must be carefully tailored to the particular ship for which it is intended. Properly used, the Guidelines will ensure that all appropriate issues that may be applicable to a particular ship are considered in developing the Plan.

2.1.2 The issues that may require consideration include but are not limited to: type and size of ship, volume of ballast carried and total capacity of tanks used for ballast, ballast pumping capacity, ship and crew safety issues, voyage type and length, the ship's typical operational requirements, and ballast water management techniques used on board.

2.2 Concept of the Plan

2.2.1 The Plan is required to be onboard the ship and available to guide personnel in safe operation of the Ballast Water Management system employed on a particular ship. Effective planning ensures that the necessary actions are taken in a structured, logical, and safe manner.

2.2.2 For the Plan to accomplish its purpose, it must be:

.1 realistic, practical, and easy to use;

.2 understood by ship's personnel engaged in ballast water management, both on board and ashore;

.3 evaluated, reviewed, and updated as necessary; and

.4 consistent with the operational ballasting requirements of the ship.

2.2.3 The Plan envisioned by Regulation B-1 of the Annex to the Convention is intended to be a simple document. Inclusion of extensive background information on the ship, its structure, etc., should be avoided, as this is generally available elsewhere. If such information is relevant, it should be kept in annexes, or an existing document or manual reference should be made to the location of the information.

2.2.4 The Plan is a document to be used on board by the ship's personnel engaged in ballast water management. The Plan must therefore be available in a working language of the ship's personnel. A change in the personnel and or the, working language or would require the issuance of the Plan in the new language(s).

2.2.5 The Plan should be readily available for inspection by officers authorized by a Party to the Convention.

2.3 Exemptions

2.3.1 Regulation A-4 allows that exemption may be granted to a ship from Regulation B-3 or C-1.

2.3.2 Details of exemptions should be retained with the Plan.

2.3.3 Any exemption granted is to be recorded in the Ballast Water Record Book.

2.4 Additional Measures

2.4.1 The Convention, in Regulation C-1 Additional Measures, gives a Party individually or jointly with other Parties, the right to introduce measures in addition to those in Section B. Such Additional Measures are to be communicated to the Organization at least 6 months prior to the projected date of implementation.

2.4.2 The Plan should be accompanied by a most recent list of Additional measures, as communicated by the Organization relevant to the ship's trade. The Plan should contain details and advice on the actions a ship must take to comply with any additional measures that may be required in accordance with Regulation C-1 and for any emergency or epidemic situations.

2.5 Review of the Plan

2.5.1 Regular review of the Plan by the owner, operator, or master should be conducted to ensure that the information contained is accurate and updated. A feedback system should be employed which will allow quick capture of changing information and incorporation of it into the Plan.

2.5.2 Changes to the provisions of this Plan will need Administration approval.

3 MANDATORY PROVISIONS

3.1 This section provides individual guidelines for the seven mandatory provisions of Regulation B-1 of the Annex to the Convention. In addition, it provides information to assist ships personnel in managing ballast water and sediments.

3.2 Regulation B-1 of the Annex to the Convention provides that the Plan shall be specific to each ship and shall at least:

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

.2 provide a detailed description of the actions to be taken to implement the Ballast Water Management practices required by the Convention;

.3 detail the procedures for the disposal of sediments at sea and to shore;

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

.5 designates the officer on board in charge of ensuring that the Plan is properly implemented;

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

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

3.3 The Ballast Water Management Plan should give guidance on the ballast handling procedures to be followed, including:

.1 uptake of ballast water;

.2 step-by-step procedures and sequences for the Ballast Water Management System used; and

.3 any operational or safety restrictions including those associated with the Ballast Water Management System used. This will also assist ship's personnel when responding to enquiries from inspection officers authorized by a Party.

3.4 Safety aspects of the Ballast Water Management system used should include, as applicable, guidance on:

.1 stability to be maintained at all times to values not less than those recommended by the Organization (or required by the Administration);

.2 approved longitudinal stress and, where applicable, torsional stress values are to be maintained within permitted values;

.3 transfer or exchange of ballast that can generate significant structural loads by sloshing action in partially-filled tanks. If these operations include partially-filled tanks, consideration should be given to carrying out the operation in favourable sea and swell conditions such that the risk of structural damage is minimized;

.4 wave-induced hull vibrations when carrying out ballast water exchange;

.5 forward and aft draughts and trim, with particular reference to bridge visibility, slamming and minimum forward draft;

.6 the effects of any potential hazards and occupational health that may affect ship's personnel shall also be identified together with any safety precautions that need to be taken; and

.7 the possible effects of tank over pressurization.

3.5 If a ship is able to complete at least 95 per cent volumatic exchange in less than three pumped volumes, documentation indicating that this ballast water exchange process has been approved under Regulation D-1.2 should be provided in the Plan.

3.6 The Plan should also include procedures for the disposal of sediments and in particular:

.1 on the sediment removal or reduction at sea, and when cleaning of the ballast tanks to remove sediments;

.2 regarding the safety consideration to be taken if tank entry is required to remove sediments; and

.3 regarding the use of port reception facilities for sediments.

3.7 The Plan should clearly identify the officer in charge of ballast water management and outline his/her duties which should include:

.1 ensuring that the Ballast Water Management performed follows the procedures in the Plan;

.2 ensuring that the Ballast Water Record Book and any other necessary documentation are maintained; and

.3 being available to assist the inspection officers authorized by a Party for any sampling that may need to be undertaken.

3.8 The Plan should contain guidance on the recording requirements according to ship's Ballast Water Record Book provided for under this Convention including details of exemptions granted to the ship.

3.9 In addition to the above, the Plan should include the following:

.1 A foreword which should provide the ship's crew with explanations on the need for ballast water management and for record keeping. The foreword should include a statement that, "This Plan must be kept available for inspection on request by an authorized authority".

.2 Ship particulars including at least:

.1 ships' name, flag, port of registry, Gross Tonnage, IMO number*, length (BP), beam, international call sign; deepest ballast drafts (normal and heavy weather);

.2 the total ballast capacity of the ship in cubic meters and other units if applicable to the ship;

.3 a brief description of the main ballast water management method(s) used on the ship; and

.4 identification (rank) of the officer in charge for implementing the Plan.

.3 Information on Ballast Water Management System used on board, including:

.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 on board, with references to operational and maintenance manuals held on board;

.6 installed ballast water treatment systems; and

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

.4 Information on the ballast water sampling points, including:

.1 A list or diagrams indicating the location of sampling and access points in pipelines and ballast water tanks, to enable crew members to assist the authorized officers of a Party that have reason to obtain samples.

.2 This section should make clear that sampling of ballast water is primarily a matter for the authorized inspection officers, 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 inspection officers.

.3 The authorized inspection officers should be advised of all safety procedures to be observed when entering enclosed spaces.

.5 Provisions for crew training and familiarization, including:

.1 requirements of a general nature regarding Ballast Water Management;

.2 training and information on ballast water management practices;

* In accordance with resolution A.600(15) IMO Ship Identification Number Scheme.

.3 ballast water exchange;

.4 ballast water treatment systems;

.5 general safety considerations;

.6 the Ballast Water Record Book and maintenance of records;

.7 the operation and maintenance of installed ballast water treatment systems;

.8 safety aspects associated with the particular systems and procedures used onboard the ship which affect the safety or human health of crew and passengers and/or the safety of the ship;

.9 precautions for entering tanks for sediment removal;

.10 procedures for the safe handling and packaging of sediment; and

.11 storage of sediment.

4 NON-MANDATORY INFORMATION

4.1 In addition to the provisions required by Articles and regulations of the Convention, the owner/operator may include in the Plan, as appendices, additional information such as: provision of additional diagrams and drawings, shipboard equipment and reference materials. National or regional requirements that differ from the Convention may also be recorded for reference.

4.2 Non-mandatory information may also include manufactures manuals (either as extracts or complete) or reference to the location on board of such manuals and other relevant material.

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APPENDIX

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 XX(YY) (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 the Administration and no alteration or revision shall be made to any part of it without the prior approval of the Administration.

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; and

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 on board;

6) installed ballast water treatment systems; and

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

* In accordance with resolution A.600(15), IMO Ship Identification Number Scheme.

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.

APPROVING AUTHORITY

Details and stamp of approving authority.

RESOLUTION MEPC.153(55)
adopted on 13 October 2006

GUIDELINES FOR BALLAST WATER RECEPTION FACILITIES (G5)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Regulation B-3.6 of the Ballast Water Management Convention provides that, the requirements of ballast water management standards do not apply to ships that discharge ballast water to a reception facility designed taking into account the Guidelines developed by the Organization for such facilities,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED, at its fifty-fifth session, the draft the Guidelines for ballast water reception facilities (G5) developed by the Ballast Water Working Group, and the recommendation made by the Sub-Committee on Flag State Implementation at its fourteenth session,

1. ADOPTS the Guidelines for ballast water reception facilities (G5) as set out in the Annex to this resolution;

2. INVITES Governments to apply these Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep these Guidelines under review.

* * *

ANNEX

GUIDELINES FOR BALLAST WATER RECEPTION FACILITIES (G5)

1 INTRODUCTION

Purpose

1.1 The purpose of these guidelines is to provide guidance for the provision of facilities for the reception of ballast water as referred to in Regulation B-3.6 of the Convention. These guidelines are not intended to require that a Party shall provide such facilities. The guidance is also intended to encourage a worldwide uniform interface between such facilities and the ships without prescribing dedicated shoreside reception plants.

Application

1.2 These guidelines apply to ballast water reception facilities referred to in the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Convention), Regulation B-3.6.

1.3 These guidelines do not apply to reception facilities for sediment referred to in Article 5 and Regulation B-5 of the Convention.

2 DEFINITIONS

2.1 For the purposes of these guidelines, the definitions in Article 1 and Regulation A-1 of the Convention apply.

3 GENERAL REQUIREMENTS FOR BALLAST WATER RECEPTION FACILITIES

3.1 A ballast water reception facility should be capable of receiving ballast water from ships so as not to create a risk to the environment, human health, property and resources arising from the release to the environment of Harmful Aquatic Organisms and Pathogens. A facility should provide pipelines, manifolds, reducers, equipment and other resources to enable, as far as practicable, all ships wishing to discharge ballast water in a port to use the facility. The facility should provide adequate equipment for mooring ships using the facility and when applicable safe anchorage.

3.2 Each Party shall report to the Organization and, where appropriate, make available to other Parties, information on the availability and location of any reception facilities for the environmentally safe disposal of ballast water.

4 PROVISION OF BALLAST WATER RECEPTION FACILITIES

4.1 When considering the requirements of these facilities many factors will have to be taken into account, these should include but not be limited to:

.1 regional, national and local legislation which will affect the facility and related to the items below;
.2 site selection;
.3 ship type and size that will use the facility;
.4 ship configurations;
.5 mooring requirements;
.6 handling of ballast water;
.7 sampling, testing and analysis of ballast water;
.8 storage and of conditions of ballast water;
.9 environmental benefits and costs;
.10 proximity of available sites to local ports;
.11 effect on the environment in construction and operation of the facility;
.12 training of facility staff;
.13 human health;
.14 safety;
.15 maintenance;
.16 operational limitations;
.17 waterway access, approaches and traffic management; and
.18 the amount of ballast water likely to be received.

5 TREATMENT AND DISPOSAL OF RECEIVED BALLAST

5.1 Disposal of ballast water from a reception facility should not create a risk to the environment, human health, property and resources arising from the release or transfer to the environment of Harmful Aquatic Organisms and Pathogens.

5.2 Treatment methods applied to the ballast water should not produce effects that may create a risk to the environment, human health, property and resources.

5.3 Where ballast water is disposed into the aquatic environment it should at least meet the ballast water performance standard specified in Regulation D-2 of the Convention. Disposal to other environments should be to a standard acceptable to the Port State. Such a standard should not create a risk to the environment, human health, property and resources arising from the release or transfer to the environment of Harmful Aquatic Organisms and Pathogens.

6 SUSPENDED MATTER

6.1 Ballast water discharged from a ship should be accepted by the ballast water reception facility including its suspended matter.

7 CAPABILITIES OF A RECEPTION FACILITY

7.1 Details of the capabilities and any capacity limitations of a treatment facility should be made available to the ships that intend to use the facility.

7.2 The details made available to ships should include but not be limited to:

.1 maximum volumetric capacity of ballast water;

.2 maximum volume of ballast water that can be handled at any one time;

.3 maximum transfer rates of ballast water (cubic metres per hour);

.4 hours of operation;

.5 ports, berths, areas where access to the facility is available;

.6 ship-to-shore pipeline connection details (pipeline size and reducers available);

.7 if ship or shore crew are required for duties such as to connect or disconnect hoses;

.8 contact details for the facility;

.9 how to request use of the facility including any notice period and what information is required from the ship;

.10 all applicable fees; and

.11 other relevant information.

7.4 The facility should provide ship to shore connections that are compatible with a recognized standard such as those in the Oil Companies International Marine Forum (OCIMF) "Recommendations for Oil Tankers Manifolds and Associated Equipment". It is recognized that this standard was originally produced for oil tankers however the general principles in this standard can be applied to connections for ballast transfer on other ship types in particular the sections related to flanges and connection methods.

8 TRAINING

8.1 Personnel in charge of and those employed in the provision of a ballast water reception facility including the treatment and disposal of ballast water should have received adequate instruction. Frequent training should include but not be limited to:

.1 the purpose and principles of the Convention;

.2 the risks to the environment and human health;

.3 risk associated with the handling of ballast water including both general safety and human health risks;

.4 safety;

.5 adequate knowledge of the equipment involved;

.6 a sufficient understanding of ships using the facility, and any operational constraints;

.7 the ship/port communication interface; and

.8 an understanding of local disposal controls.

8.2 The training should be organized by the manager or the operator of the reception facility and delivered by suitably qualified professionals.

RESOLUTION MEPC.124(53)
adopted on 22 July 2005

GUIDELINES FOR BALLAST WATER EXCHANGE (G6)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Regulation B-4 of the Annex to the Ballast Water Management Convention addresses the conditions under which ballast water exchange should be conducted, taking into account Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invites the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED the draft Guidelines for ballast water exchange developed by the Ballast Water Working Group and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its ninth session,

1. ADOPTS the Guidelines for ballast water exchange, as set out in the Annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES FOR BALLAST WATER EXCHANGE (G6)

1 INTRODUCTION

1.1 The purpose of these Guidelines is to provide shipowners and operators with general guidance on the development of ship specific procedures for conducting ballast water exchange. Whenever possible ship owner and operators should enlist the assistance of classification societies or qualified marine surveyors in tailoring ballast exchange practices for various conditions of weather, cargo and stability. The application of processes and procedures concerning ballast water management are at the core of the solution to prevent, minimize and ultimately eliminate the introduction of harmful aquatic organisms and pathogens. Ballast water exchange offers a means, when used in conjunction with good ballast water management practices, to assist in achieving this solution.

1.2 Ballast water exchange introduces a number of safety issues, which affect both the ship and its crew. These Guidelines are intended to provide guidance on the safety and operational aspects of ballast water exchange at sea.

1.3 Given that there are different types of ships, which may be required to undertake ballast water exchange at sea, it is 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.

Application

1.4 The Guidelines apply to all those involved with ballast water exchange including, shipowners and operators, designers, classification societies and shipbuilders. Operational procedures and guidance reflecting the issues rose in these Guidelines should be reflected in the ships ballast water management plan.

2 DEFINITIONS

2.1 For the purposes of these Guidelines, the definitions in the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Convention) apply and:

.1 "Ballast Water Tank" – means any tank, hold, or space used for the carriage of ballast water.

3 RESPONSIBILITIES

3.1 Shipowners and operators should ensure, prior to undertaking ballast water exchange, that all the safety aspects associated with the ballast water exchange method or methods used onboard have been considered and that suitably trained personnel are onboard. A review of the safety aspects, the suitability of the exchange methods being used and the aspects of crew training should be undertaken at regular intervals.

3.2 The Ballast Water Management Plan is to include the duties of key shipboard control personnel undertaking ballast water exchange at sea. Such personnel should be fully conversant with the safety aspects of ballast water exchange and in particular the method of exchange used on board their ship and the particular safety aspects associated with the method used.

3.3 In accordance with Regulation B-4.4 of the Convention if the master reasonably decides that to perform ballast water exchange would threaten the safety or stability of the ship, its crew or its passengers, because of adverse weather, the ship's design, stress, equipment failure, or any other extraordinary condition a ship shall not be required to comply with Regulations B-4.1 and B-4.2.

.1 When a ship does not undertake ballast water exchange for the reasons stated in paragraph above, the reasons shall be entered in the Ballast Water Record Book.

.2 The port or coastal State concerned may require that the discharge of ballast water must be in accordance with procedures determined by them taking into account the Guidelines for additional measures including emergency situations (G13).

4 BALLAST WATER EXCHANGE REQUIREMENTS

4.1 Exchange of ballast water in deep ocean areas or open seas offers a means of limiting the probability that harmful aquatic organisms and pathogens be transferred in ships ballast water.

4.2 Regulation D-1 of the Convention requires that:

.1 ships performing ballast water exchange in accordance with this regulation shall do so with an efficiency of at least 95 per cent volumetric exchange of ballast water; and

.2 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 in paragraph 1. Pumping through less than three times the volume may be accepted provided the ship can demonstrate that at least 95 per cent volumetric exchange is met.

4.3 There are three methods of Ballast Water exchange which have been evaluated and accepted by the Organization. The three methods are the sequential method, the flow-through method and the dilution method. The flow-through method and the dilution method are considered as "pump through" methods.

4.4 The three accepted methods can be described as follows:

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

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

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

5 SAFETY PRECAUTIONS ASSOCIATED WITH BALLAST WATER EXCHANGE

5.1 Three methods of carrying out ballast water exchange at sea have been identified as acceptable by the Organization. Each has particular safety aspects associated with it that should be considered when selecting the method(s) to be used on a particular ship.

5.2 When identifying the ballast water exchange method(s) for the first time for a particular ship, an evaluation should be made which should include:

.1 the safety margins for stability and strength contained in allowable seagoing conditions, as specified in the approved trim and stability booklet and the loading manual relevant to individual types of ships. Account should also be taken of the loading conditions and the envisaged ballast water exchange method or methods to be used;

.2 the ballast pumping and piping system taking account of the number of ballast pumps and their capacities, size and arrangements of ballast water tanks; and

.3 the availability and capacity of tank vents and overflow arrangements, for the flow through method, the availability and capacity of tank overflow points, prevention of under and over pressurization of the ballast tanks.

5.3 Particular account should be taken of the following:

.1 stability which is to be maintained at all times and not less than those values recommended by the Organization or required by the Administration;

.2 longitudinal stress, and where applicable torsional stress values, not to exceed permitted values with regard to prevailing sea conditions;

.3 exchange of ballast in tanks where significant structural loads may be generated by sloshing action in the partially filled tank to be carried out in favourable sea and swell conditions such that the risk of structural damage is minimized;

.4 wave-induced hull vibrations when carrying out ballast water exchange;

.5 imitations of the available methods of ballast water exchange in respect of sea and weather conditions;

.6 forward and aft draughts and trim, with particular reference to bridge visibility, slamming, propeller immersion and minimum forward draft; and

.7 additional work loads on the master and crew.

5.4 Having undertaken an evaluation for a particular ship and the exchange method or methods to be used, the ship should be provided with procedures, advice and information appropriate to the exchange method(s) identified and ship type in the Ballast Water Management Plan. The procedures, advice, and information in the Ballast Water Management Plan, may include but is not limited to the following:

.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 maintain adequate intact stability in accordance with an approved trim and stability booklet;

.4 permissible seagoing strength limits of shear forces and bending moments in accordance with an approved loading manual;

.5 torsional forces;

.6 forward and aft draughts and trim, with particular reference to bridge visibility, propeller immersion and minimum forward draft;

.7 wave-induced hull vibrations when performing ballast water exchange;

.8 watertight and weathertight closures (e.g. manholes) which may have to be opened during ballast exchange must be re-secured;

.9 maximum pumping/flow rates – to ensure the tank is not subjected to a pressure greater than that for which it has been designed;

.10 internal transfers of ballast;

.11 admissible weather conditions;

.12 weather routeing in areas seasonably affected by cyclones, typhoons, hurricanes, or heavy icing conditions;

.13 documented records of ballasting and/or de-ballasting and/or internal transfers of ballast;

.14 contingency procedures for situations which may affect ballast water exchange at sea, including deteriorating weather conditions, pump failure and loss of power;

.15 time to complete the ballast water exchange for each tank or an appropriate sequence thereof;

.16 continual monitoring of the ballast water operation; monitoring should include pumps, levels in tanks, line and pump pressures, stability and stresses;

.17 a list of circumstances in which ballast water exchange should not be undertaken. These circumstances may result from critical situations of an exceptional nature or *force majeure* due to stress of weather, known equipment failures or defects, or any other circumstances in which human life or safety of the ship is threatened;

.18 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 build up of ice on deck; and

.19 personnel safety, including precautions which may be required when personnel are required to work on deck at night, in heavy weather, when ballast water overflows the deck, and in freezing conditions. These concerns may be related to the risks to the personnel of falling and injury, due to the slippery wet surface of the deck plate, when water is overflowing on deck, and to the direct contact with the ballast water, in terms of occupational health and safety.

5.5 During ballast water exchange sequences there may be times when, for a transitory period, one or more of the following criteria cannot be fully met or are found to be difficult to maintain:

.1 bridge visibility standards (SOLAS V/22);

.2 propeller immersion; and

.3 minimum draft forward.

5.6 As the choice of acceptable ballast water exchange sequences is limited for most ships, it is not always practicable to dismiss from consideration those sequences where transitory noncompliance may occur. The practical alternative would be to accept such sequences provided an appropriate note is placed in the Ballast Water Management Plan to alert the ship's master. The note would advise the master of the nature of the transitory non-compliance, that additional planning may be required and that adequate precautions need to be taken when using such sequences.

5.7 In planning a ballast water exchange operation that includes sequences which involve periods when the criteria for propeller immersion, minimum draft and/or trim and bridge visibility cannot be met, the Master should assess:

.1 the duration(s) and time(s) during the operation that any of the criteria will not be met;

.2 the effect(s) on the navigational and manoeuvring capabilities of the ship; and

.3 the time to complete the operation.

5.8 A decision to proceed with the operation should only be taken when it is anticipated that:

.1 the ship will be in open water;

.2 the traffic density will be low;

.3 an enhanced navigational watch will be maintained including if necessary an additional look out forward with adequate communications with the navigation bridge;

.4 the manoeuvrability of the vessel will not be unduly impaired by the draft and trim and or propeller immersion during the transitory period; and

.5 the general weather and sea state conditions will be suitable and unlikely to deteriorate.

5.9 On oil tankers, segregated ballast and clean ballast may be discharged below the water line at sea by pumps if the ballast water exchange is performed under the provisions of Regulation D-1.1 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, provided that the surface of the ballast water has been examined either visually or by other means immediately before the discharge to ensure that no contamination with oil has taken place.

6 CREW TRAINING AND FAMILIARIZATION

6.1 Appropriate training for ships' masters and crews should include instructions on the safety issues associated with ballast water exchange based upon the information contained in these Guidelines. Instruction should be provided on the ships' Ballast Water Management Plan including the completion of required records.

6.2 Ships' officers and crew engaged in ballast water exchange at sea should be trained in and be familiar with the following as appropriate:

.1 the ship's ballast pumping and piping arrangements, positions of associated air and sounding pipes, positions of all compartment and tank suctions 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 including the time to complete individual tanks;

.4 the method(s) in use for ballast water exchange at sea if applicable with particular reference to required safety precautions; and

.5 the need to continually monitor ballast water exchange operations.

7 FUTURE CONSIDERATIONS IN RELATION TO BALLAST WATER EXCHANGE

7.1 These Guidelines may be revised and updated in the light of possible technical evolutions with the ballast water exchange methods and of new ballast water management options.

RESOLUTION MEPC.162(56)
adopted on 13 July 2007

GUIDELINES FOR RISK ASSESSMENT UNDER REGULATION A-4 OF THE BWM CONVENTION (G7)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that regulation A-4 of the Convention stipulates that a Party or Parties, in waters under their jurisdiction, may grant exemptions to any requirements to apply regulation B-3 or C-1, in addition to those exemptions contained elsewhere in this Convention, but only when they are, *inter alia*, granted based on the Guidelines on risk assessment developed by the Organization.

NOTING ALSO that the International Conference on Ballast Water Management for Ships, in its resolution 1, invited the Organization to develop the Guidelines for uniform application of the Convention as a matter of urgency,

HAVING CONSIDERED, at its fifty-sixth session, the draft Guidelines for risk assessment under regulation A-4 (G7) of the BWM Convention developed by the Ballast Water Working Group, and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its eleventh session,

1. ADOPTS the Guidelines for risk assessment under regulation A-4 (G7) of the BWM Convention as set out in the annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES FOR RISK ASSESSMENT UNDER REGULATION A-4 OF THE BWM CONVENTION (G7)

1 PURPOSE

1.1 The purpose of these Guidelines is to assist Parties to ensure that provisions of regulation A-4 of the Convention are applied in a consistent manner, and based on scientifically robust risk assessment, which ensures that the general and specific obligations of a Party to the Convention are achieved.

1.2 An additional purpose is to provide assurance to affected States that exemptions granted by a Party meet the regulation A-4.3 obligations.

1.3 The Guidelines outline three risk assessment methods that will enable Parties to identify unacceptable high risk scenarios and acceptable low risk scenarios, and advise Parties on procedures for granting and withdrawing exemptions in accordance with regulation A-4.

2 INTRODUCTION

2.1 Regulation A-4 of the Convention states that a Party or Parties, in waters under their jurisdiction may grant exemptions to any requirements to apply regulation B-3 or C-1, in addition to those exemptions contained elsewhere in the Convention, but only when they are:

.1 granted to a ship or ships on a voyage or voyages between specified ports or locations; or to a ship which operates exclusively between specified ports or locations;

.2 effective for a period of no more than five years subject to intermediate review;

.3 granted to ships that do not mix ballast water or sediments other than between the ports or locations specified in paragraph 2.1.1; and

.4 granted based on the Guidelines that have been developed by the Organization.

2.2 These Guidelines provide advice and information regarding risk assessment principles and methods, data needs, advice on application of risk assessment methods, procedures for granting exemptions, consultation and communication processes, information for reviewing exemptions and advice regarding technical assistance, co-operation and regional co-operation.

2.3 These Guidelines also provide advice regarding the roles of the Organization, shipping industry, port States and other States that might be affected by granting an exemption in accordance with regulation A-4 of the Convention.

2.4 Scientifically robust risk assessment underpins the process of Parties granting exemptions under regulation A-4 of the Convention. The assessment must be sufficiently robust to distinguish between unacceptable high risk scenarios and acceptable low risk scenarios where the discharge of ballast water not meeting regulations B-3 and C-1 is unlikely to impair or damage the environment, human health, property or resources of the granting Party and of adjacent or other States.

2.5 Risk assessments should be based on best available scientific information.

2.6 The Guidelines should be kept under review in order to incorporate experiences gained during their application and any new scientific and technical knowledge.

3 APPLICATION

3.1 These Guidelines apply to Parties granting exemptions to ships under regulation A-4 of the Convention.

3.2 Shipowners or operators wanting to seek an exemption under regulation A-4 should also consult these Guidelines.

4 DEFINITIONS

4.1 For the purposes of these Guidelines, the definitions in the Convention apply.

4.2 "Anadromous": species that spawn/reproduce in freshwater environments, but spend at least part of their adult life in a marine environment.

4.3 "Biogeographic region": a large natural region defined by physiographic and biologic characteristics within which the animal and plant species show a high degree of similarity. There are no sharp and absolute boundaries but rather more or less clearly expressed transition zones.

4.4 "Catadromous": species that spawn/reproduce in marine environments, but spend at least part of their adult life in a freshwater environment.

4.5 "Cryptogenic": species that are of unknown origin, i.e. species that are not demonstrably native or introduced to a region.

4.6 "Donor Port": port or location where the ballast water is taken onboard.

4.7 "Euryhaline": species able to tolerate a wide range of salinities.

4.8 "Eurythermal": species able to tolerate a wide range of temperatures.

4.9 "Freshwater": water with salinity lower than 0.5 psu (practical salinity units).

4.10 "Marine water": Water with salinity higher than 30 psu.

4.11 "Non-indigenous species": any species outside its native range, whether transported intentionally or accidentally by humans or transported through natural processes.

4.12 "Recipient port": port or location where the ballast water is discharged.

4.13 "Target species": species identified by a Party that meet specific criteria indicating that they may impair or damage the environment, human health, property or resources and are defined for a specific port, State or biogeographic region.

5 RISK ASSESSMENT PRINCIPLES

5.1 Risk assessment is a logical process for assigning the likelihood and consequences of specific events, such as the entry, establishment, or spread of harmful aquatic organisms and pathogens. Risk assessments can be qualitative or quantitative, and can be a valuable decision aid if completed in a systematic and rigorous manner.

5.2 The following key principles define the nature and performance of risk assessment:

.1 **Effectiveness –** That risk assessments accurately measures the risks to the extent necessary to achieve an appropriate level of protection.

.2 **Transparency –** That the reasoning and evidence supporting the action recommended by risk assessments, and areas of uncertainty (and their possible consequences to those recommendations), are clearly documented and made available to decision-makers.

.3 **Consistency –** That risk assessments achieve a uniform high level of performance, using a common process and methodology.

.4 **Comprehensiveness –** That the full range of values, including economic, environmental, social and cultural, are considered when assessing risks and making recommendations.

.5 **Risk Management –** That low risk scenarios may exist, but zero risk is not obtainable, and as such risk should be managed by determining the acceptable level of risk in each instance.

.6 **Precautionary –** That risk assessments incorporate a level of precaution when making assumptions, and making recommendations, to account for uncertainty, unreliability, and inadequacy of information. The absence of, or uncertainty in, any information should there-

fore be considered an indicator of potential risk.

.7 **Science based –** That risk assessments are based on the best available information that has been collected and analysed using scientific methods.

.8 **Continuous improvement –** Any risk model should be periodically reviewed and updated to account for improved understanding.

5.3 In undertaking risk assessment when considering granting an exemption, the risk assessment principles should be carefully applied. The lack of full scientific certainty should be carefully considered in the decision making process. This is especially important under these Guidelines, as any decision to grant an exemption will allow for the discharge of ballast water that does not meet the standards of regulation D-1 or D-2.

6 RISK ASSESSMENT METHODS

6.1 General

6.1.1 There are three risk assessment methods outlined in these Guidelines for assessing the risks in relation to granting an exemption in accordance with regulation A-4 of the Convention:

- Environmental matching risk assessment
- Species' biogeographical risk assessment
- Species-specific risk assessment

6.1.2 Environmental matching risk assessment relies on comparing environmental conditions between locations, species' biogeographical risk assessment compares the overlap of native and non-indigenous species to evaluate environmental similarity and to identify high risk invaders, while species-specific risk assessment evaluates the distribution and characteristics of identified target species. Dependent on the scope of the assessment being performed, the three approaches could be used either individually or in any combination, recognizing that each approach has its limitations.

6.1.3 Environment matching and species' biogeographical risk assessment may be best suited to assessments between biogeographic regions. Species-specific risk assessment may be best suited to situations where the assessment can be conducted on a limited number of harmful species within a biogeographic region.

6.2 Environmental matching risk assessment

6.2.1 Environmental matching risk assessments compare environmental conditions including temperature and salinity between donor and recipient regions. The degree of similarity between the locations provides an indication of the likelihood of survival and the establishment of any species transferred between those locations.

6.2.2 Since species are widely distributed in a region, and are rarely restricted to a single port the environmental conditions of the source region should be considered.

6.2.3 These regions are typically defined as biogeographic regions. Noting that all of the existing biogeographical schemes were derived for different purposes than proposed here, it is suggested that the Large Marine Ecosystems (LME) scheme (http://www.edc.uri.edu/lme) be used based on best available information at this time, with local and regional adaptation as necessary. It is recognized that the suggested biogeographical scheme may not be appropriate in certain circumstances and in this case other recognized biogeographical schemes may need to be considered [1].

6.2.4 Environmental matching should therefore compare environmental conditions between the donor biogeographic region and the recipient port to determine the likelihood that any species found in the donor biogeographic region are able to survive in the recipient port in another biogeographic region. The environmental conditions that may be considered for environmental matching include salinity, temperature or other environmental conditions, such as nutrients or oxygen.

6.2.5 The difficulty in using environmental matching risk assessments is identifying the environmental conditions that are predictive of the ability of the harmful species to successfully establish and cause harm in the new location, and in determining whether the risk of ballast water discharge is sufficiently low to be acceptable. Environmental matching risk assessments have limited value where the differences between a donor biogeographic region and a recipient port are small as high similarity is likely to indicate high likelihood of successful establishment.

6.2.6 Environmental conditions should also be compared between the donor and recipient ports. Similarity in key environmental conditions between the two ports is a stronger indication that species entrained in ballast water in the donor port could survive when released into the waters of the recipient port. The environmental conditions that may be considered for environmental matching include salinity, temperature or other environmental conditions, such as nutrients or oxygen.

6.2.7 The data necessary to enable a risk assessment using environmental matching includes, but is not limited to:

.1 Origin of the ballast water to be discharged in recipient port.

.2 Biogeographic region of donor and recipient port(s).

.3 The average and range of environmental conditions, in particular salinity and temperature.

This information is used to determine the degree of environmental similarity between the donor and recipient environments. In many cases, it should be possible to use existing data for part or all of these environmental profiles.

6.2.8 The following should be considered in gathering data on the environmental conditions:

.1 The seasonal variations in surface and bottom salinities and temperatures at the recipient port and the larger water body the port is contained within (e.g., estuary or bay). Surface and bottom values are needed to determine the full range of environmental conditions available for a potential invader (e.g., low salinity surface waters allowing the invasion of a freshwater species). Salinity and temperature depth profiles are not required if available data indicates the waters are well mixed over the entire year.

.2 In recipient ports with strong tides or currents, the temporal variations in salinity should be determined over a tidal cycle.

.3 In areas with seasonal or depth variations, the salinity should be determined on a seasonal and/or depth basis.

.4 Any anthropogenic influences on freshwater flow that could temporarily or permanently alter the salinity regime of the recipient port and surrounding waters.

.5 The seasonal temperature variation of coastal waters for the biogeographic region of the recipient port. Consideration should be given to both surface waters and to how temperature varies with depth.

6.2.9 It is recommended that the analysis of environmental conditions be followed by a consideration of the species known to be in the donor region that can tolerate extreme environmental differences. If present,

a species-specific approach should be used to evaluate the risks associated with these species. Such species include:

- species that utilize both fresh and marine environments to complete their life-cycle (including anadromous (e.g., Sea Lamprey) and catadromous (e.g., Chinese Mitten crab) species);
- species with a tolerance to a wide range of temperatures (eurythermal species) or salinities (euryhaline species).

6.3 Species' biogeographical risk assessment

6.3.1 Species' biogeographical risk assessment compares the biogeographical distributions of nonindigenous, cryptogenic, and harmful native species that presently exist in the donor and recipient ports and biogeographic regions. Overlapping species in the donor and recipient ports and regions are a direct indication that environmental conditions are sufficiently similar to allow a shared fauna and flora. The biogeographical analysis could also be used to identify high risk invaders. For example, native species in the donor biogeographic region that have successfully invaded other similar biogeographic regions but that are not found in the recipient biogeographic region could be considered high risk invaders for the recipient port or location. The larger the number of biogeographic regions that such species have invaded, the greater the potential that those species would be able to become established in the recipient port or biogeographic region if introduced by ballast water not meeting regulation B-3 or C-1. Another general indicator of risk would be if the donor biogeographic region is a major source of invaders to other areas.

6.3.2 The data necessary to enable a risk assessment using a species biogeographical approach includes but may not be limited to:

.1 records of invasion in the donor and recipient biogeographic regions and ports;

.2 records of native or non-indigenous species that could be transferred through ballast water in the donor biogeographic region that have invaded other biogeographic regions and the number and nature of biogeographic regions invaded;

.3 records of native species in the donor region that have the potential to affect human health or result in substantial ecological or economic impacts after introduction in the recipient region through ballast water transfer.

6.3.3 The species' biogeographical risk assessment could also be used to identify potential target species in the donor regions as indicated by native species with wide biogeographical or habitat distributions or which are known invaders in other biogeographic regions similar to that of the recipient port.

6.4 Species-specific risk assessment

6.4.1 Species-specific risk assessments use information on life history and physiological tolerances to define a species' physiological limits and thereby estimate its potential to survive or complete its life cycle in the recipient environment. That is, they compare individual species characteristics with the environmental conditions in the recipient port, to determine the likelihood of transfer and survival.

6.4.2 In order to undertake a species-specific risk assessment, species of concern that may impair or damage the environment, human health, property or resources need to be identified and selected. These are known as the target species. Target species should be selected for a specific port, State, or geographical

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[1] Watling and Gerkin (http://marine.rutgers.edu/OBIS/index.html) based on Briggs (1953) and Springer (1982); IUCN bioregion system; Briggs (1953) and Ekman (1974; 1995); Longhurst provinces.

region, and should be identified and agreed on in consultation with affected States.

6.4.3 To determine the species that are potentially harmful and invasive, parties should initially identify all species (including cryptogenic species) that are present in the donor port but not in the recipient port. Target species should then be selected based on criteria that identify the species that have the ability to invade and become harmful. The factors to consider when identifying target species include, but should not be limited to:

- evidence of prior introduction;
- demonstrated impacts on environment, economy, human health, property or resources;
- strength and type of ecological interactions, e.g. ecological engineers;
- current distribution within biogeographic region and in other biogeographic regions; and
- relationship with ballast water as a vector.

6.4.4 Species-specific risk assessments should then be conducted on a list of target species, including actual or potentially harmful non-indigenous species (including cryptogenic species). As the number of species included in the assessment increases the number of low risk scenarios decreases. This is justified if the species assessments are accurate. The difficulty arises when the assessments are conservative due to lack of data. It should be recognized however, that the fewer the number of species analyzed, the greater the uncertainty in predicting the overall risk. The uncertainty associated with limiting the analysis to a small number of species should therefore be considered in assessing the overall risk of invasion.

6.4.5 It should be noted that there are limitations involved with using a target species approach. Although some data and information can be obtained to support decision making, identifying species that may impair or damage the environment, human health, property or resources is subjective and there will be a degree of uncertainty associated with the approach. For example, it is possible that species identified as harmful in some environments may not be harmful in others and vice versa.

6.4.6 If species-specific risk assessments are undertaken when the donor and recipient ports are within different biogeographic regions, Parties should identify and consider any uncertainties resulting from lack of data on the presence of potentially harmful species in the donor location.

6.4.7 The data necessary to enable a risk assessment using the species-specific approach includes, but is not limited to:

.1 biogeographic region of donor and recipient port(s);

.2 the presence of all non-indigenous species (including cryptogenic species) and native species in the donor port(s), port region and biogeographic region, not present in the recipient port, to allow identification of target species;

.3 the presence of all target species in the recipient port(s), port region, and biogeographic region;

.4 the difference between target species in the donor and recipient ports, port region, and biogeographic region;

.5 life history information on the target species and physiological tolerances, in particular salinity and temperature, of each life stage; and

.6 habitat type required by the target species and availability of habitat type in the recipient port.

6.4.8 If a target species is already present in the recipient port, it may be reasonable to exclude that species from the overall risk assessment for that port unless that species is under active control. It is important to recognize, however, that even when a non-indigenous species or cryptogenic species has been reported from the donor and recipient ports, its continual introduction into the recipient ports could increase the probability that it will become established and/or achieve invasive population densities.

6.4.9 A risk assessment can take different forms. A simple assessment can be undertaken as outlined in paragraph 6.4.7 of whether a target species is present in the donor port but not in a recipient port and can be transported through ballast water. However, if considered appropriate, the likelihood of target species surviving each of the following stages may be assessed, including:

.1 Uptake – probability of viable stages entering the vessel's ballast water tanks during ballast water uptake operations;

.2 Transfer – probability of survival during the voyage;

.3 Discharge – probability of viable stages entering the recipient port through ballast water discharge on arrival; and

.4 Population establishment – probability of the species establishing a self-maintaining population in the recipient port.

6.4.10 To determine the likelihood of transfer and survival of a harmful species, the probability of each species surviving each of the stages contained in paragraph 6.4.9 may be assessed. To the extent possible the different life stages of the target species may also be assessed considering seasonal variations of life stage occurrence in donor port with seasonal conditions in the recipient port. The overall risk assessment for the discharge of unmanaged ballast water is therefore determined based on the assessment of all target species surviving all these stages.

6.4.11 In assessing whether a species will survive in the recipient port, physiological tolerances of all life stages need to be considered.

.1 The ability of the adults to survive would be indicated by the physiological limits for both temperature and salinity that fall within the environmental ranges observed in the recipient port and larger water body. As a check, a comparison could be made with the native and/or introduced ranges of the species to determine if the predicted tolerances (based on lab or field studies) reflect actual distributions.

.2 For other life stages the physiological requirements of each stage in the life cycle should be compared against the environmental conditions during the season(s) of reproduction, noting that these stage(s) may live in different habitats to complete their life cycle (e.g., coastal pelagic larvae of estuarine benthic invertebrates). Data should be collected as appropriate.

.3 Comparisons of known physiological tolerances for other conditions should be conducted if the data are available and relevant.

6.4.12 To evaluate whether the species-specific risk assessment approach is sufficiently robust to predict invaders, the approach could be used to estimate the probabilities of invasion for a suite of existing invaders within the recipient port. Failure to accurately predict existing invaders may indicate that the model under predicts the risk.

6.5 Evaluation and decision-making

6.5.1 The port State granting exemptions shall, in both the evaluation and consultation processes, give special attention to regulation A-4.3 which states that any exemptions granted under this regulation shall not impair or damage the environment, human health, property or resources of adjacent or other States.

Regulation A-4.3 also states that States that may be adversely affected shall be consulted, and Parties should refer to section 8 regarding consultation.

6.5.2 It is important for the transparency and consistency of the risk assessments to define a priori criteria to distinguish between unacceptable high risk scenarios and acceptable low risk scenarios where the risk of ballast water not meeting regulations B-3 and C-1 is unlikely to impair or damage the environment, human health, property or resources of the granting Party and of adjacent or other States. The specific criteria depend upon the risk assessment approach, as well as the uncertainty in the analysis.

6.5.3 For an environmental matching risk assessment:

.1 A high-risk scenario could be indicated if the environmental conditions of the donor ports overlap the environmental conditions of the recipient region.

.2 A low-risk scenario could be indicated if the environmental conditions of the donor port do not overlap the environmental conditions of the recipient region.

6.5.4 For the species' biogeographical risk assessment:

.1 A high-risk could be indicated if the recipient port presently contains non-indigenous species whose native range includes the donor biogeographic region.

.2 A high-risk could be indicated if the donor and recipient ports share non-indigenous species whose source is from other biogeographic regions.

.3 A moderate to high risk could be indicated if the recipient biogeographic region presently contains non-indigenous species whose native range includes the donor biogeographic region.

.4 A moderate to high risk could be indicated if the donor biogeographic region is a major source for invaders for other biogeographic regions.

6.5.5 For a species-specific risk assessment, an assessment could be deemed high risk if it identifies at least one target species that satisfies all of the following:

- likely to cause harm;
- present in the donor port or biogeographic region;
- likely to be transferred to the recipient port through ballast water; and
- likely to survive in the recipient port.

6.5.6 The overall probability of a successful invasion also depends in part on the number of organisms and the frequency with which they are introduced over the entire period of the exemption. Therefore, it is recommended that a risk assessment should consider estimates of at least the following four factors:

.1 the total volume of water discharged

.2 the volume of water discharged in any event (voyage)

.3 the total number of discharge events

.4 the temporal distribution of discharge events.

6.5.7 In all cases, the level of uncertainty needs to be considered in evaluating the extent of risk. High levels of uncertainty in the biogeographical distributions and/or physiological tolerances of a target species may be sufficient in themselves to classify the risk as high. Additionally, the potential ecological impact of

the target species should be considered in deciding the level of acceptable risk. The absence of, or uncertainty in, any information should not be considered a reason to grant an exemption to regulation B-3 or C-1.

6.5.8 Once the level of risk and the extent of uncertainty have been assessed, the result can be compared to the levels a Party(s) is willing to accept in order to determine whether an exemption can be granted.

6.5.9 Ships on a voyage(s) or route(s) that satisfy the requirements of regulation A-4.1 and that pass(es) the terms of acceptance in the risk assessment may be granted an exemption.

6.5.10 It is recommended that an independent peer review of the risk assessment method, data and assumptions be undertaken in order to ensure that a scientifically rigorous analysis has been conducted. The peer review should be undertaken by an independent third party with biological and risk assessment expertise.

7 PROCEDURES FOR GRANTING EXEMPTIONS

7.1 The purpose of this section is to provide guidance for Parties, Administrations and ships, engaged in the process of applying for, evaluating and/or granting exemptions in accordance with the provisions of regulation A-4. The appendix also identifies minimum information required for an exemption application.

7.2 Parties may undertake the risk assessment themselves in order to grant exemptions, or require the shipowner or operator to undertake the risk assessment. In any event the Party granting an exemption is responsible for evaluating the risk assessment, verifying the data and information used, and ensuring the risk assessment is conducted in a thorough and objective manner in accordance with the Guidelines. The recipient port State(s) should reject any application for exemption found not to be in accordance with these Guidelines, and should provide reasons as to why the application was not accepted.

7.3 Shipowners or operators wanting to seek an exemption should contact the relevant Parties to ascertain the risk assessment procedures to be undertaken and the information requirements of these procedures.

7.4 Where a Party has determined that the shipowner or operator should undertake the risk assessment, the Party should provide relevant information, including any application requirements, the risk assessment model to be used, any target species to be considered, data standards and any other required information. The shipowner or operator should follow these Guidelines and submit relevant information to the Party.

7.5 The port State shall ensure that, as required by regulation A-4.1.3, exemptions are only granted to ships that do not mix ballast water or sediments other than between the locations specified in the exemption. The port State should require evidence of the specific measures undertaken to ensure compliance with this regulation at the time the exemption is granted and over the duration of the exemption. Non-compliance during the period of exemption should result in prompt suspension or revocation of the exemption.

7.6 An exemption shall not be effective for more than 5 years from the date granted. The approval may contain seasonal and time-specific or other restrictions within the time of validity.

7.7 The result of the risk assessment should be stated as:

.1 The voyage(s) or route(s) represent(s) an acceptable risk. The application for an exemption is granted.

.2 The voyage(s) or route(s) may represent an unacceptable risk. Further consideration is required.

.3 The voyage(s) or route(s) represent(s) an unacceptable risk. The exemption from the ballast water management requirements of regulation B-3 or C-1 of the Convention is not granted.

8 CONSULTATION

8.1 In accordance with regulation A-4.3, Parties shall consult any State that may be adversely affected from any exemptions that may be granted. This should include adjacent States and any other States that may be affected, including those located in the same biogeographic region as the recipient port(s). States should exchange information and endeavour to resolve any identified concerns. Sufficient time must be given for affected States to consider proposed exemptions carefully.

8.2 Affected States should be provided with information on: the risk assessment method applied; the quality of the information used in the assessment; uncertainties in the model, model inputs and/or risk assessments; the rationale for the proposed exemption; and any terms or conditions applicable to the exemption.

8.3 The risk assessment should document the following elements as appropriate:

- Criteria or reference for defining target species in the risk method.
- The inventories of native, non-indigenous, and cryptogenic species used in the species' biogeographical risk assessment.
- Acceptance criteria applied in each step of the analysis. The risk assessment has to be put in a relevant context to enable determination of whether the risk level is acceptable or not. The only transparent verifiable way of doing this is to compare the actual risk level with clear predefined acceptance criteria in paragraphs 6.5.2 to 6.5.8.

8.4 In addition, the criteria or scientific methods used in defining and delimiting the biogeographic regions shall be presented if a scheme other than that recommended in paragraph 6.2.3 is used.

8.5 The invitation for comments should contain one of the two following options for the affected State's response:

.1 Supported without comments or conditions.

.2 Supported with comments and/or conditions.

8.6 The deadline for comments from the affected State(s) should be specified in the invitation. If no response within the given time-limit is received, this may be regarded as "Accepted without comments or conditions".

8.7 If an affected State does not support the granting of the exemption(s), the appropriate reasons should be provided. Any conditions or limitations which an affected State believes to be necessary to enable them to support an exemption should be clearly identified.

9 COMMUNICATION OF INFORMATION

9.1 Each Party to the Convention that has indicated it will grant exemptions should establish a point or points of contact for receipt of applications. Relevant contact details should be submitted to the Organization. In the absence of such information from a Party, the IMO MEPC contact point should be regarded as the contact point for the purpose of these Guidelines.

9.2 The Organization should circulate the list of contacts, and keep this list updated on a regular basis.

9.3 The decision of the recipient port State(s) shall be communicated to the shipowners or operators, the affected State(s), and the Organization as soon as possible before the effective date of the exemption. The decision should explain the basis for granting the exemption and how any comments from affected States were addressed and specify the voyage or voyages in which the exemption is granted, including the

specified ports or location(s), the duration of the exemption and details of any conditions or limitations on the exemption.

9.4 Exemptions granted in accordance with regulation A-4 of the Convention, shall be effective after communication to the Organization and circulation of relevant information to Parties.

9.5 Any exemption granted shall also be recorded in the ballast water record book in accordance with regulation A-4.4.

9.6 Where exemptions have been granted for a specific voyage, any changes in voyage plans must be communicated to the Party that has granted the exemption prior to undertaking the voyage or prior to discharge of ballast water.

10 REVIEW OF RISK ASSESSMENT AND WITHDRAWAL OF EXEMPTIONS

10.1 It is recommended that information used in the risk assessment be reviewed regularly as data and assumptions used in the assessment can become outdated.

10.2 It is recommended that an intermediate review be undertaken within 12 months but in any circumstances no later than 36 months after permission is granted. A recipient port State may require several reviews to be taken during the period the exemption is granted for, but more frequent than annual reviews generally should not be required.

10.3 Renewal of an exemption following the initial 60 months must not be granted without a thorough review of the risk assessment, consultation with affected States, and notice of the decision to the Organization under regulation A-4.2.

10.4 An exemption granted under regulation A-4 of the Convention may need to be withdrawn where the actual risk associated with a voyage has increased substantially since the risk assessment was conducted. This would include emergency situations such as outbreaks, incursions, infestations, or proliferations of populations of harmful aquatic organisms and pathogens (e.g., harmful algal blooms) which are likely to be taken up in ballast water (regulation C-2 of the Convention).

10.5 When a port State notifies mariners of areas under its jurisdiction where ships should not uptake ballast water due to an emergency or other high risk situation, all exemptions should be withdrawn from ships that take up ballast water in the defined area. In such circumstances the shipowners or operators should be notified of the decision to withdraw the exemption as soon as possible.

10.6 Guidelines for additional measures regarding ballast water management including emergency situations (G13) adopted by resolution MEPC.161(56) provide guidance to rapidly identify appropriate additional measures whenever emergency situations occur in relation to ballast water operations.

11 TECHNICAL ASSISTANCE, CO-OPERATION AND REGIONAL CO-OPERATION

11.1 Article 13 of the Convention provides that Parties undertake, directly or through the Organization and other international bodies, to provide support for those Parties which request technical assistance, that Parties undertake to co-operate and that Parties shall endeavour to enhance regional co-operation.

11.2 With regard to these risk assessment Guidelines, assistance should include provision of data and information required to undertake a risk assessment, technical assistance regarding the methods for undertaking risk assessment and acceptance criteria.

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APPENDIX

APPLICATION TO PORT STATE

An application for exemption to the port State should as a minimum contain information on the points listed below.

1 GENERAL INFORMATION

- Period for which an application is sought; from month and year to month and year.
- Why an exemption under regulation A-4 is sought.

2 SHIP'S INFORMATION

- Ship name
- IMO number
- Port of registry
- Gross Tonnage
- Owner
- Call sign
- Ballast water management option usually undertaken by ship, including ballast water treatment technology, if installed
- A copy of the Ship's Ballast Water Management Plan should be submitted
- The Administration may also require ballast water and sediment management history for a determined period

3 ROUTE INFORMATION

- Route of application, given as donor port(s) and recipient port for ballast water discharge.
- If single voyage: Date and time of departure and arrival.
- If multiple voyages: Voyage frequency, regularity and estimated amount of ballast water discharged during the exemption period. Estimated time and dates for departures and arrivals.
- Any voyages the ship plans to take to ports other than the specified ports during the duration of the exemption.
- If multiple voyages, the estimated total number of voyages and the amount of ballast water discharged under the duration of the exemption.

RESOLUTION MEPC.174(58)
adopted on 10 October 2008

GUIDELINES FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS (G8)*

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four conference resolutions,

NOTING that regulation D-3 of the Annex to the Ballast Water Management Convention provides that ballast water management systems used to comply with this Convention must be approved by the Administration, taking into account Guidelines developed by the Organization,

NOTING ALSO resolution MEPC.125(53) by which the Committee adopted the Guidelines for approval of ballast water management systems (G8),

NOTING FURTHER that by resolution MEPC.125(53), the Committee resolved to keep Guidelines (G8) under review in the light of experience gained,

HAVING CONSIDERED, at its fifty-eighth session, the recommendation made by the Ballast Water Review Group,

1. ADOPTS the revised Guidelines for approval of ballast water management systems (G8), as set out in the Annex to this resolution;

2. INVITES Member Governments to give due consideration to the revised Guidelines (G8) when type approving ballast water management systems;

3. AGREES to keep the revised Guidelines (G8) under review in the light of experience gained;

4. URGES Member Governments to bring the aforementioned Guidelines to the attention of manufacturers of ballast water management systems and other parties concerned with a view to encouraging their use; and

5. REVOKES the Guidelines adopted by resolution MEPC.125(53).

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* Note of the editor: G8 Guidelines are under review.

ANNEX

GUIDELINES FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS (G8)

Contents

GUIDELINES FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS (G8)

1 INTRODUCTION

General

1.1 These Guidelines for approval of ballast water management systems are aimed primarily at Administrations, or their designated bodies, in order to assess whether ballast water management systems meet the standard as set out in regulation D-2 of the "International Convention for the Control and Management of Ships' Ballast Water and Sediments," hereafter referred to as the "Convention". In addition, this document can be used as guidance for manufacturers and shipowners on the evaluation procedure that equipment will undergo and the requirements placed on ballast water management systems. These Guidelines should be applied in an objective, consistent and transparent way and their application should be evaluated periodically by the Organization.

1.2 Articles and regulations referred to in these Guidelines are those contained in the Convention.

1.3 The Guidelines include general requirements concerning design and construction, technical procedures for evaluation and the procedure for issuance of the Type Approval Certificate of the ballast water management system.

1.4 These Guidelines are intended to fit within an overall framework for evaluating the performance of systems that includes the experimental shipboard evaluation of prototype systems under the provisions of regulation D-4, approval of ballast water management systems and associated systems that comply fully with the requirements of the Convention, and port State control sampling for compliance under the provisions of article 9 of the Convention.

1.5 The requirements of regulation D-3 stipulate that ballast water management systems used to comply with the Convention must be approved by the Administration, taking into account these Guidelines. In addition to such ballast water management system approval, as set forth in regulation A-2 and regulation B-3, the Convention requires that discharges of ballast water from ships must meet the regulation D-2 performance standard on an on- going basis. Approval of a system is intended to screen-out management systems that would fail to meet the standards prescribed in regulation D-2 of the Convention. Approval of a system, however, does not ensure that a given system will work on all vessels or in all situations. To satisfy the Convention, a discharge must comply with the D-2 standard throughout the life of the vessel.

1.6 The operation of ballast water management systems should not impair the health and safety of the ship or personnel, nor should it present any unacceptable harm to the environment or to public health.

1.7 Ballast water management systems are required to meet the standards of regulation D-2 and the conditions established in regulation D-3 of the Convention. These Guidelines serve to evaluate the safety, environmental acceptability, practicability and biological effectiveness of the systems designed to meet these standards and conditions. The cost effectiveness of type-approved equipment will be used in determining the need for revisions of these Guidelines.

1.8 These Guidelines contain recommendations regarding the design, installation, performance, testing environmental acceptability and approval of ballast water management systems.

1.9 To achieve consistency in its application, the approval procedure requires that a uniform manner of testing, analysis of samples, and evaluation of results is developed and applied. These Guidelines should be applied in an objective, consistent, and transparent way; and their suitability should be periodically evaluated and revised as appropriate by the Organization. New versions of these Guidelines should be duly circulated by the Organization. Due consideration should be given to the practicability of the ballast water management systems.

Goal and purpose

1.10 The goal of these Guidelines is to ensure uniform and proper application of the standards contained in the Convention. As such the Guidelines are to be updated as the state of knowledge and technology may require.

1.11 The purposes of these Guidelines are to:

.1 define test and performance requirements for the approval of ballast water management systems;

.2 assist Administrations in determining appropriate design, construction and operational parameters necessary for the approval of ballast water management systems;

.3 provide a uniform interpretation and application of the requirements of regulation D-3;

.4 provide guidance to Administrations, equipment manufacturers and shipowners in determining the suitability of equipment to meet the requirements of the Convention and of the environmental acceptability of treated water; and

.5 assure that ballast water management systems approved by Administrations are capable of achieving the standard of regulation D-2 in land-based and shipboard evaluations and do not cause unacceptable harm to the vessel, crew, the environment or public health.

Applicability

1.12 These Guidelines apply to the approval of ballast water management systems in accordance with the Convention.

1.13 These Guidelines apply to ballast water management systems intended for installation on board all ships required to comply with regulation D-2.

Summary of requirements

1.14 The land-based and shipboard approval requirements for ballast water management systems specified in these guidelines are summarized below.

1.15 The manufacturer of the equipment should submit information regarding the design, construction, operation and functioning of the ballast water management system in accordance with Part 1 of the annex. This information should be the basis for a first evaluation of suitability by the Administration.

1.16 The ballast water management system should be tested for Type Approval in accordance with the procedures described in Parts 2 and 3 of the annex.

1.17 Successful fulfilment of the requirements and procedures for Type Approval as outlined in Parts 2 and 3 of the annex should lead to the issuance of a Type Approval Certificate by the Administration.

1.18 When a Type Approved ballast water management system is installed on board, an installation survey according to section 8 should be carried out.

2 BACKGROUND

2.1 The requirements of the Convention relating to approval of ballast water management systems used by ships are set out in regulation D-3.

2.2 Regulation D-2 stipulates that ships meeting the requirements of the Convention by meeting the ballast water performance standard must discharge:

.1 less than 10 viable organisms per cubic metre greater than or equal to 50 micrometres in minimum dimension;

.2 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

.3 less than the following concentrations of indicator microbes, as a human health standard:

.1 Toxicogenic *Vibrio cholerae* (serotypes O1 and O139) with less than 1 Colony Forming Unit (cfu) per 100 millilitres or less than 1 cfu per 1 gramme (wet weight) of zooplankton samples;

.2 *Escherichia coli* less than 250 cfu per 100 millilitres; and

.3 Intestinal *Enterococci* less than 100 cfu per 100 millilitres.

3 DEFINITIONS

For the purpose of these Guidelines:

3.1 Active Substance means a substance or organism, including a virus or a fungus that has a general or specific action on or against harmful aquatic organisms and pathogens.

3.2 Ballast Water Management System (BWMS) means any system which processes ballast water such that it meets or exceeds the ballast water performance standard in regulation D-2. The BWMS includes ballast water treatment equipment, all associated control equipment, monitoring equipment and sampling facilities.

3.3 The Ballast Water Management Plan is the document referred to in regulation B-1 of the Convention describing the ballast water management process and procedures implemented on board individual ships.

3.4 Ballast Water Treatment Equipment means equipment which mechanically, physically, chemically, or biologically processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments. Ballast water treatment equipment may operate at the uptake or discharge of ballast water, during the voyage, or at a combination of these events.

3.5 Control Equipment refers to the installed equipment required to operate and control the ballast water treatment equipment.

3.6 The Convention means the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

3.7 Monitoring Equipment refers to the equipment installed for the assessment of the effective operation of the ballast water treatment equipment.

3.8 Sampling Facilities refers to the means provided for sampling treated or untreated ballast water as needed in these Guidelines and in the "Guidelines for ballast water sampling (G2)" developed by the Organization.

3.9 Shipboard Testing is a full scale test of a complete BWMS carried out on board a ship according to Part 2 of the annex to these Guidelines, to confirm that the system meets the standards set by regulation D-2 of the Convention.

3.10 Treatment Rated Capacity (TRC) is the maximum continuous capacity expressed in cubic metres

per hour for which the BWMS is type approved. It states the amount of ballast water that can be treated per unit time by the BWMS to meet the standard in regulation D-2 of the Convention.

3.11 Land-based Testing is a test of the BWMS carried out in a laboratory, equipment factory or pilot plant including a moored test barge or test ship, according to Parts 2 and 3 of the annex to these Guidelines, to confirm that the BWMS meets the standards set by regulation D-2 of the Convention.

3.12 Viable Organisms are organisms and any life stages thereof that are living.

4 TECHNICAL SPECIFICATIONS

4.1 This section details the general technical requirements which a BWMS should meet in order to obtain Type Approval.

Ballast water management systems

4.2 The BWMS should not contain or use any substance of a dangerous nature, unless adequate arrangements for storage, application, mitigation, and safe handling, acceptable to the Administration, are provided to mitigate any hazards introduced thereby.

4.3 In case of any failure compromising the proper operation of the BWMS, audible and visual alarm signals should be given in all stations from which ballast water operations are controlled.

4.4 All working parts of the BWMS that are liable to wear or to be damaged should be easily accessible for maintenance. The routine maintenance of the BWMS and troubleshooting procedures should be clearly defined by the manufacturer in the operating and maintenance manual. All maintenance and repairs should be recorded.

4.5 To avoid interference with the BWMS, the following items should be included:

.1 every access of the BWMS beyond the essential requirements of paragraph 4.4, should require the breaking of a seal;

.2 if applicable, the BWMS should be so constructed that a visual alarm is always activated whenever the BWMS is in operation for purposes of cleaning, calibration, or repair, and these events should be recorded by the control equipment;

.3 in the event of an emergency, suitable by-passes or overrides to protect the safety of the ship and personnel should be installed; and

.4 any bypass of the BWMS should activate an alarm, and the bypass event should be recorded by the Control Equipment.

4.6 Facilities should be provided for checking, at the renewal surveys and according to the manufacturer's instructions, the performance of the BWMS components that take measurements. A calibration certificate certifying the date of the last calibration check, should be retained on board for inspection purposes. Only the manufacturer or persons authorized by the manufacturer should perform the accuracy checks.

Ballast water treatment equipment

4.7 The ballast water treatment equipment should be robust and suitable for working in the shipboard environment, should be of a design and construction adequate for the service for which it is intended and should be so installed and protected as to reduce to a minimum any danger to persons on board, due regard being paid to hot surfaces and other hazards. The design should have regard to materials used in construction, the purpose for which the equipment is intended, the working conditions to which it will be subjected and the environmental conditions on board.

4.8 The ballast water treatment equipment should be provided with simple and effective means for its operation and control. It should be provided with a control system that should be such that the services needed for the proper operation of the ballast water treatment equipment are ensured through the necessary automatic arrangements.

4.9 The ballast water treatment equipment should, if intended to be fitted in locations where flammable atmospheres may be present, comply with the relevant safety regulations for such spaces. Any electrical equipment that is part of the BWMS should be based in a non- hazardous area, or should be certified by the Administration as safe for use in a hazardous area. Any moving parts, which are fitted in hazardous areas, should be arranged so as to avoid the formation of static electricity.

Control and monitoring equipment

4.10 The BWMS should incorporate control equipment that automatically monitors and adjusts necessary treatment dosages or intensities or other aspects of the BWMS of the vessel, which while not directly effecting treatment, are nonetheless required for proper administration of the necessary treatment.

4.11 The control equipment should incorporate a continuous self- monitoring function during the period in which the BWMS is in operation.

4.12 The monitoring equipment should record the proper functioning or failure of the BWMS.

4.13 To facilitate compliance with regulation B-2, the control equipment should also be able to store data for at least 24 months, and should be able to display or print a record for official inspections as required. In the event the control equipment is replaced, means should be provided to ensure the data recorded prior to replacement remains available on board for 24 months.

4.14 It is recommended that simple means be provided aboard ship to check on drift by measuring devices that are part of the control equipment, repeatability of the control equipment devices, and the ability to re-zero the control equipment meters.

5 TYPICAL DOCUMENT REQUIREMENTS FOR THE PLAN APPROVAL PROCESS

5.1 The documentation submitted for approval should include at least the following:

.1 a description of the BWMS. The description should include a diagrammatic drawing of the typical or required pumping and piping arrangements, and sampling facilities, identifying the operational outlets for treated ballast water and any waste streams as appropriate and necessary. Special considerations may have to be given to installations intended for ships that have unusual pumping and piping arrangements;

.2 equipment manuals, supplied by manufacturers, containing details of the major components of the BWMS and their operation and maintenance;

.3 a generic operations and technical manual for the complete BWMS. This manual should cover the arrangements, the operation and maintenance of the BWMS as a whole and should specifically describe parts of the BWMS which are not covered by the manufacturer's equipment manuals;

.4 the operations section of the manual including normal operational procedures and procedures for the discharge of untreated water in the event of malfunction of the ballast water treatment equipment, maintenance procedures, and emergency action necessary for securing the ship;

.5 methods for the conditioning of treated water prior to discharge should be provided, and assessment of discharged water should include a description of the effect of treatment on the ship's ballast water, in particular the nature of any treatment residuals and by-products and the water's suitability for discharge into coastal waters. A description should also be provided of any actions necessary to monitor, and if necessary "condition", treated water prior to

discharge in order that it meets applicable water quality regulations; if it can reasonably be concluded that the treatment process could result in changes to the chemical composition of the treated water such that adverse impacts to receiving waters might occur upon discharge, the documentation should include results of toxicity tests of treated water. The toxicity tests should include assessments of the effects of hold time following treatment, and dilution, on the toxicity. Toxicity tests of the treated water should be conducted in accordance with paragraphs 5.2.3 to 5.2.7 of the Procedure for approval of ballast water management systems that make use of Active Substances (G9), as revised, (resolution MEPC.169(57));

.6 a description of BWMS side streams (e.g., filtered material, centrifugal concentrate, waste or residual chemicals) including a description of the actions planned to properly manage and dispose of such wastes;

.7 a technical section of the manual including adequate information (description and diagrammatic drawings of the monitoring system and electrical/electronic wiring diagrams) to enable faultfinding. This section should include instructions for keeping a maintenance record;

.8 a technical installation specification defining, inter alia, requirements for the location and mounting of components, arrangements for maintaining the integrity of the boundary between safe and hazardous spaces and the arrangement of the sample piping; and

.9 a recommended test and checkout procedure specific to the BWMS. This procedure should specify all the checks to be carried out in a functional test by the installation contractor and should provide guidance for the surveyor when carrying out the on board survey of the BWMS and confirming the installation reflects the manufacturer's specific installation criteria.

6 APPROVAL AND CERTIFICATION PROCEDURES

6.1 A BWMS which in every respect fulfils the requirements of these Guidelines may be approved by the Administration for fitting on board ships. The approval should take the form of a Type Approval Certificate of BWMS, specifying the main particulars of the apparatus and any limiting conditions on its usage necessary to ensure its proper performance. Such certificate should be issued in the format shown in appendix 1. A copy of the Type Approval Certificate of BWMS should be carried on board ships fitted with such a system at all times.

6.2 A Type Approval Certificate of BWMS should be issued for the specific application for which the BWMS is approved, e.g., for specific ballast water capacities, flow rates, salinity or temperature regimes, or other limiting conditions or circumstances as appropriate.

6.3 A Type Approval Certificate of BWMS should be issued by the Administration based on satisfactory compliance with all the test requirements described in Parts 2, 3 and 4 of the annex.

6.4 An Administration may issue a Type Approval Certificate of BWMS based on separate testing or on testing already carried out under supervision by another Administration.

6.5 The Type Approval Certificate of BWMS should:

.1 identify the type and model of the BWMS to which it applies and identify equipment assembly drawings, duly dated;

.2 identify pertinent drawings bearing model specification numbers or equivalent identification details;

.3 include a reference to the full performance test protocol on which it is based, and be accompanied by a copy of the original test results; and

.4 identify if it was issued by an Administration based on a Type Approval Certificate previously issued by another Administration. Such a certificate should identify the Administration that conducted the tests on the BWMS and a copy of the original test results should be attached to the Type Approval Certificate of BWMS.

6.6 An approved BWMS may be Type Approved by other Administrations for use on their vessels. Should a system approved by one country fail Type Approval in another country, then the two countries concerned should consult one another with a view to reaching a mutually acceptable agreement.

7 INSTALLATION REQUIREMENTS

Sampling facilities

7.1 The BWMS should be provided with sampling facilities so arranged in order to collect representative samples of the ship's ballast water.

7.2 Sampling facilities should in any case be located on the BWMS intake, before the discharging points, and any other points necessary for sampling to ascertain the proper functioning of the equipment as may be determined by the Administration.

8 INSTALLATION SURVEY AND COMMISSIONING PROCEDURES

8.1 Verify that the following documentation is on board in a suitable format:

.1 a copy of the Type Approval Certificate of BWMS;

.2 a statement from the Administration, or from a laboratory authorized by the Administration, to confirm that the electrical and electronic components of the BWMS have been type-tested in accordance with the specifications for environmental testing contained in Part 3 of the annex;

.3 equipment manuals for major components of the BWMS;

.4 an operations and technical manual for the BWMS specific to the ship and approved by the Administration, containing a technical description of the BWMS, operational and maintenance procedures, and backup procedures in case of equipment malfunction;

.5 installation specifications;

.6 installation commissioning procedures; and

.7 initial calibration procedures.

8.2 Verify that:

.1 the BWMS installation has been carried out in accordance with the technical installation specification referred to in paragraph 8.1.5;

.2 the BWMS is in conformity with the Type Approval Certificate of BWMS issued by the Administration or its representative;

.3 the installation of the complete BWMS has been carried out in accordance with the manufacturer's equipment specification;

.4 any operational inlets and outlets are located in the positions indicated on the drawing of the pumping and piping arrangements;

.5 the workmanship of the installation is satisfactory and, in particular, that any bulkhead penetrations or penetrations of the ballast system piping are to the relevant approved standards; and

.6 the control and monitoring equipment operates correctly.

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ANNEX

This annex provides detailed test and performance specifications for a BWMS and contains:

PART 1 – Specifications for Pre -test Evaluation of System Documentation

PART 2 – Test and Performance Specifications for Approval of Ballast Water Management Systems

PART 3 – Specification for Environmental Testing for Approval of Ballast Water Management Systems

PART 4 – Sample Analysis Methods for the Determination of Biological Constituents in Ballast Water

PART 1 – SPECIFICATIONS FOR PRE-TEST EVALUATION OF SYSTEM DOCUMENTATION

1.1 Adequate documentation should be prepared and submitted to the Administration as part of the approval process well in advance of the intended approval testing of a BWMS. Approval of the submitted documentation should be a pre-requisite for carrying out independent approval tests.

General

1.2 Documentation should be provided by the manufacturer/developer for two primary purposes: evaluating the readiness of the BWMS for undergoing approval testing, and evaluating the manufacturer's proposed test requirements and procedures for the test.

Readiness evaluation

1.3 The readiness evaluation should examine the design and construction of the BWMS to determine whether there are any fundamental problems that might constrain the ability of the BWMS to manage ballast water as proposed by the manufacturer, or to operate safely, on board ships. The latter concern should, in addition to basic issues related to the health and safety of the crew, interactions with the ship's systems and cargo, and potential adverse environmental effects, also consider the potential for longer-term impacts to the safety of the crew and vessel through effects of the BWMS on corrosion in the ballast system and other spaces.

1.4 The evaluation should also address the degree, if any, to which the manufacturer's/developer's effo rts during the research and development phase tested the performance and reliability of the system under operational shipboard conditions and should include a report of the results of those tests.

Test proposal evaluation

1.5 Evaluation of the test proposal should examine all of the manufacturer's stated requirements and procedures for installing, calibrating, and operating (including maintenance requirements) the BWMS during a test. This evaluation should help the test organization to identify any potential health or environmental safety problems, unusual operating requirements (labour or materials), and any issues related to the disposal of treatment by-products or waste streams.

Documentation

1.6 The documentation to be submitted should include at least the following:

.1 **Technical Manual** – The technical description should include:

- product specification;
- process description;

- operational instructions;
- details (including Certificates where appropriate) of the major components and materials used;
- technical installation specifications in accordance with manufacturers' specific installation criteria;
- system limitations; and
- routine maintenance and trouble-shooting procedures.

.2 **BWMS Drawings** – Diagrammatic drawings of the pumping and piping arrangements, electrical/electronic wiring diagrams, which should include reference to any waste streams and sampling points;

.3 **Link to the Ballast Water Management Plan** – Information regarding the characteristics and arrangements in which the system is to be installed as well as the scope of the ships (sizes, types and operation) for which the system is intended. This information can later form the link between the system and the ship's ballast water management plan; and

.4 **Environmental and Public Health Impacts** – Potential hazards for the environment should be identified and documented based on environmental studies performed to the extent necessary to assure that no harmful effects are to be expected. In the case of ballast water management systems that make use of Active Substances or Preparations containing one or more Active Substances the "Procedure for the approval of ballast water management systems that make use of Active Substances (G9)", as revised, should be followed. The system should then ensure that dosage of the Active Substance and the maximum allowable discharge concentration is kept under the approved criteria at all times. In the case of ballast water management systems that do not make use of Active Substances or Preparations, but which could reasonably be expected to result in changes to the chemical composition of the treated water such that adverse impacts to receiving waters might occur upon discharge, the documentation should include results of toxicity tests of treated water as described in paragraph 5.1.5 of these Guidelines.

1.7 The documentation may include specific information relevant to the test set- up to be used for land-based testing according to these Guidelines. Such information should include the sampling needed to ensure proper functioning and any other relevant information needed to ensure proper evaluation of the efficacy and effects of the equipment. The information provided should also address general compliance with applicable environment, health and safety standards during the Type Approval procedure.

PART 2 – TEST AND PERFORMANCE SPECIFICATIONS FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS

The Administration decides the sequence of land-based and shipboard testing.

2.1 Quality Assurance and Quality Control Procedures

2.1.1 The testing body performing the tests should have implemented appropriate quality control measures in accordance with recognized international standards acceptable to the Administration.

2.1.2 The approval testing process should contain a rigorous quality control/quality assurance program, consisting of:

.1 Both a Quality Management Plan (QMP) and a Quality Assurance Project Plan (QAPP).

Guidance on preparation of these plans, along with other guidance documents and other general quality control information are available from appropriate international organizations[1].

.2 The QMP addresses the quality control management structure and policies of the testing body (including subcontractors and outside laboratories).

.3 The QAPP is a project specific technical document reflecting the specifics of the BWMS to be tested, the test facility, and other conditions affecting the actual design and implementation of the required experiments.

2.2 **Shipboard tests**

2.2.1 A shipboard test cycle includes:

.1 the uptake of ballast water of the ship;

.2 the storage of ballast water on the ship;

.3 treatment of the ballast water in accordance with paragraph 2.2.2.3 by the BWMS, except in control tanks; and

.4 the discharge of ballast water from the ship.

Success criteria for shipboard testing

2.2.2 In evaluating the performance of BWMS installation(s) on a ship or ships, the following information and results should be supplied to the satisfaction of the Administration:

.1 Test plan to be provided prior to testing.

.2 Documentation that the BWMS is of a capacity within the range of the treatment rated capacity for which it is intended.

.3 The amount of ballast water tested in the test cycle on board should be consistent with the normal ballast operations of the ship and the BWMS should be operated at the treatment rated capacity for which it is intended to be approved.

.4 Documentation of the results of three consecutive, valid test cycles showing discharge of treated ballast water in compliance with regulation D-2.

.5 Valid tests are indicated by uptake water, for both the control tank and ballast water to be treated, with viable organism concentration exceeding 10 times the maximum permitted values in regulation D-2.1 and control tank viable organism concentration exceeding the values of regulation D-2.1 on discharge.

.6 Sampling regime:

.1 For the control tank:

.1 three replicate samples of influent water, collected over the period of uptake (e.g., beginning, middle, end); and

.2 three replicate samples of discharge control water, collected over the period of discharge (e.g., beginning, middle, end).

[1] Such as ISO/IEC 17025.

.2 For treated ballast water:

.1 Three replicate samples of discharge treated water collected at each of three times during the period of discharge (e.g., 3 x beginning, 3 x middle, 3 x end).

.3 Sample sizes are:

.1 For the enumeration of organisms greater than or equal to 50 micrometres or more in minimum dimension, samples of at least one cubic metre should be collected. If samples are concentrated for enumeration the samples should be concentrated using a sieve no greater than 50 micrometres mesh in diagonal dimension.

.2 For the enumeration of organisms greater than or equal to 10 micrometres and less than 50 micrometres in minimum dimension, samples of at least one litre should be collected. If samples are concentrated for enumeration the samples should be concentrated using a sieve no greater than 10 micrometres mesh in diagonal dimension.

.3 For the evaluation of bacteria a sample of at least 500 millilitres should be taken from the influent and treated water. In the absence of laboratory facilities on board the toxicogenic test requirements should be conducted in an appropriately approved laboratory. However, this may limit the applicability of this test.

.7 The test cycles including invalid and unsuccessful test cycles are to span a trial period of not less than six months.

.8 The applicant is requested to perform three consecutive test cycles that comply with regulation D-2 and which are valid in accordance with paragraph 2.2.2.5. Any invalid test cycle does not affect the consecutive sequence.

.9 The source water for test cycles shall be characterized by measurement of salinity, temperature, particulate organic carbon and total suspended solids.

.10 For system operation throughout the trial period, the following information should also be provided:

.1 documentation of all ballast water operations including volumes and locations of uptake and discharge, and if heavy weather was encountered and where;

.2 the possible reasons for the occurrence of an unsuccessful test cycle, or a test cycle discharge failing the D-2 standard should be investigated and reported to the Administration;

.3 documentation of scheduled maintenance performed on the system;

.4 documentation of unscheduled maintenance and repair performed on the system;

.5 documentation of engineering parameters monitored as appropriate to the specific system; and

.6 documentation of functioning of the control and monitoring equipment.

2.3 Land-based testing

2.3.1 The test set-up including the ballast water treatment equipment should operate as described in the provided documentation during at least 5 valid replicate test cycles. Each test cycle should take place over a period of at least 5 days.

2.3.2 A land-based test cycle should include:

.1 the uptake of ballast water by pumping;

.2 the storage of ballast water for at least 5 days;

.3 treatment of ballast water within the BWMS, except in control tanks; and

.4 the discharge of ballast water by pumping.

2.3.3 Testing should occur using different water conditions sequentially as provided for in paragraphs 2.3.17 and 2.3.18.

2.3.4 The BWMS should be tested at its rated capacity or as given in paragraphs 2.3.13 to 2.3.15 for each test cycle. The equipment should function to specifications during this test.

2.3.5 The analysis of treated water discharge from each test cycle should be used to determine that the average of discharge samples does not exceed the concentrations of regulation D-2 of the Convention.

2.3.6 The analysis of treated water discharge from the relevant test cycle(s) should also be used to evaluate the toxicity of the discharged water for BWMS that make use of Active Substances and also for those BWMS that do not make use of Active Substances or Preparations but which could reasonably be expected to result in changes to the chemical composition of the treated water such that adverse impacts to receiving waters might occur upon discharge. Toxicity tests of the treated water discharge should be conducted in accordance with paragraphs 5.2.3 to 5.2.7 of the Procedure for approval of ballast water management systems that make use of Active Substances, as revised (resolution MEPC.169(57)).

Land-based testing objectives, limitations and criteria for evaluation

2.3.7 The land-based testing serves to determine the biological efficacy and environmental acceptability of the BWMS under consideration for Type Approval. The approval testing aims to ensure replicability and comparability to other treatment equipment.

2.3.8 Any limitations imposed by the ballast water management system on the testing procedure described here should be duly noted and evaluated by the Administration.

Land-based set-up

2.3.9 The test set-up for approval tests should be representative of the characteristics and arrangements of the types of ships in which the equipment is intended to be installed. The test set-up should therefore include at least the following:

.1 the complete BWMS to be tested;

.2 piping and pumping arrangements; and

.3 the storage tank that simulates a ballast tank, constructed such that the water in the tank should be completely shielded from light.

2.3.10 The control and treated simulated ballast tanks should each include:

.1 a minimum capacity of 200 m^3 ;

.2 normal internal structures, including lightening and drainage holes;

.3 standard industry practices for design, construction and surface coatings for ships; and

.4 the minimum modifications required for structural integrity on land.

2.3.11 The test set- up should be pressure- washed with tap water, dried and swept to remove loose debris, organisms and other matter before starting testing procedures, and between test cycles.

2.3.12 The test set-up will include facilities to allow sampling as described in paragraphs 2.3.26 and 2.3.27 and provisions to supply influents to the system, as specified in paragraph 2.3.19 and/or 2.3.20. The installation arrangements should conform in each case with those specified and approved under the procedure outlined in section 7 of the main body to these Guidelines.

Ballast water treatment equipment scaling

2.3.13 In-line treatment equipment may be downsized for land-based testing, but only when the following criteria are taken into account:

.1 equipment with a TRC equal to or smaller than 200 m^3/h should not be downscaled;

.2 equipment with a TRC larger than 200 m^3 /h but smaller than 1,000 m^3 /h may be downscaled to a maximum of 1:5 scale, but may not be smaller than 200 m^3/h; and

.3 equipment with a TRC equal to, or larger than, 1,000 m^3/h may be downscaled to a maximum of 1:100 scale, but may not be smaller than 200 m^3 /h.

2.3.14 The manufacturer of the equipment should demonstrate by using mathematical modelling and/or calculations, that any downscaling will not affect the ultimate functioning and effectiveness on board a ship of the type and size for which the equipment will be certified.

2.3.15 In-tank treatment equipment should be tested on a scale that allows verification of full-scale effectiveness. The suitability of the test set-up should be evaluated by the manufacturer and approved by the Administration.

2.3.16 Larger scaling may be applied and lower flow rates used than provided for in 2.3.13, if the manufacturer can provide evidence from full-scale shipboard testing and in accordance with 2.3.14 that scaling and flow rates will not adversely affect the ability of the results to predict full-scale compliance with the standard.

Land-based test design – inlet and outlet criteria

2.3.17 For any given set of test cycles (5 replicates is considered a set) a salinity range should be chosen. Given the salinity, the test water used in the test set up described above should have dissolved and particulate content in one of the following combinations:

	Salinity		
	> 32 PSU	3 – 32 PSU	< 3 PSU
Dissolved Organic Carbon (DOC)	> 1 mg/l	> 5 mg/l	> 5 mg/l
Particulate Organic Carbon (POC)	> 1 mg/l	> 5 mg/l	> 5 mg/l
Total Suspended Solids (TSS)	> 1 mg/l	> 50 mg/l	> 50 mg/l

2.3.18 At least two sets of tests cycles should be conducted, each with a different salinity range and associated dissolved and particulate content as prescribed in paragraph 2.3.17. Tests under adjacent salinity ranges in the above table should be separated by at least 10 PSU[2].

2.3.19 Test organisms may be either naturally occurring in the test water, or cultured species that may be added to the test water. The organism concentration should comply with paragraph 2.3.20 below.

2.3.20 The influent water should include:

.1 test organisms of greater than or equal to 50 micrometres or more in minimum dimension should be present in a total density of preferably 10^6 but not less than 10^5 individuals per cubic metre, and should consist of at least 5 species from at least 3 different phyla/divisions;

.2 test organisms greater than or equal to 10 micrometres and less than 50 micrometres in minimum dimension should be present in a total density of preferably 10^4 but not less than 10^3 individuals per millilitre, and should consist of at least 5 species from at least 3 different phyla/divisions;

.3 heterotrophic bacteria should be present in a density of at least 10^4 living bacteria per millilitre; and

.4 the variety of organisms in the test water should be documented according to the size classes mentioned above regardless if natural organism assemblages or cultured organisms were used to meet the density and organism variety requirements.

2.3.21 The following bacteria do not need to be added to the influent water, but should be measured at the influent and at the time of discharge:

.1 Coliform;

.2 Enterococcus group;

.3 *Vibrio cholerae*; and

.4 Heterotrophic bacteria.

2.3.22 If cultured test organisms are used, then it should be ensured that local applicable quarantine regulations are taken into account during culturing and discharge.

Land-based monitoring and sampling

2.3.23 Change of numbers of test organisms by treatment and during storage in the simulated ballast tank should be measured using methods described in Part 4 of the annex, paragraphs 4.5 to 4.7.

2.3.24 It should be verified that the treatment equipment performs within its specified parameters, such as power consumption and flow rate, during the test cycle.

2.3.25 Environmental parameters such as pH, temperature, salinity, dissolved oxygen, TSS, DOC, POC and turbidity (NTU)[3] should be measured at the same time that the samples described are taken.

2.3.26 Samples during the test should be taken at the following times and locations: immediately before the treatment equipment, immediately after the treatment equipment and upon discharge.

2.3.27 The control and treatment cycles may be run simultaneously or sequentially. Control samples are to be taken in the same manner as the equipment test as prescribed in paragraph 2.3.26 and upon influent and discharge. A series of examples are included in figure 1.

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[2] For example, if one set of test cycles is carried out at >32 PSU and a second set at 3-32 PSU, the test cycle in the 3-32 PSU range needs to be at least 10 PSU less than the lowest salinity used in the test cycle in the >32 PSU range.

[3] NTU=Nominal Turbidity Unit

2.3.28 Facilities or arrangements for sampling should be provided to ensure representative samples of treated and control water can be taken that introduce as little adverse effects as possible on the organisms.

2.3.29 Samples described in paragraphs 2.3.26 and 2.3.27 should be collected in triplicate on each occasion.

2.3.30 Separate samples should be collected for:

.1 organisms of greater than or equal to 50 micrometres or more in minimum dimension;

.2 organisms greater than or equal to 10 micrometres and less than 50 micrometres in minimum dimension;

.3 for coliform, enterococcus group, *Vibrio cholerae* and heterotrophic bacteria; and

.4 toxicity testing of treated water, from the discharge, for BWMS that make use of Active Substances and also for those BWMS that do not make use of Active Substances or Preparations but which could reasonably be expected to result in changes to the chemical composition of the treated water such that adverse impacts to receiving waters might occur upon discharge.

2.3.31 For the comparison of organisms of greater than or equal to 50 micrometres or more in minimum dimension against the D-2 standard, at least 20 litres of influent water and l cubic metre of treated water, in triplicate respectively, should be collected. If samples are concentrated for enumeration, the samples should be concentrated using a sieve no greater than 50 micrometres mesh in the diagonal dimension.

2.3.32 For the evaluation of organisms greater than or equal to 10 micrometres and less than 50 micrometres in minimum dimension, at least 1 litre of influent water and at least 10 litres of treated water should be collected. If samples are concentrated for enumeration, the samples should be concentrated using a sieve no greater than 10 micrometres mesh in the diagonal dimension.

2.3.33 For the evaluation of bacteria, at least 500 millilitres of influent and treated water should be collected in sterile bottles.

2.3.34 The samples should be analysed as soon as possible after sampling, and analysed live within 6 hours or treated in such a way so as to ensure that proper analysis can be performed.

2.3.35 The efficacy of a proposed system should be tested by means of standard scientific methodology in the form of controlled experimentation, i.e. "experiments". Specifically, the effect of the BWMS on organism concentration in ballast water should be tested by comparing treated ballast water, i.e. "treated groups", to untreated "control groups", such that:

.1 one experiment should consist of a comparison between control water and treated water. Multiple samples, but at a minimum of three, of control and treated water within a single test cycle should be taken to obtain a good statistical estimate of the conditions within the water during that experiment. Multiple samples taken during a single test cycle should not be treated as independent measures in the statistical evaluation of treatment effect, to avoid "pseudo-replication".

2.3.36 If in any test cycle the average discharge results from the control water is a concentration less than or equal to 10 times the values in regulation D-2.1, the test cycle is invalid.

2.3.37 Statistical analysis of BWMS performance should consist of t-tests, or similar statistical tests, comparing control and treated water. The comparison between control and treated water will provide a test of unexpected mortality in the control water, indicating the effect of an uncontrolled source of mortality in the testing arrangement.

2.4 Reporting of test results

2.4.1 After approval tests have been completed, a report should be submitted to the Administration. This report should include information regarding the test design, methods of analysis and the results of these analyses.

2.4.2 The results of biological efficacy testing of the BWMS should be accepted if during the land-based and shipboard testing conducted as specified in sections 2.2 and 2.3 of this annex it is shown that the system has met the standard in regulation D-2 in all test cycles as provided in paragraph 4.7 below.

PART 3 – SPECIFICATION FOR ENVIRONMENTAL TESTING FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS

Test specifications

3.1 The electrical and electronic sections of BWMS in the standard production configuration should be subjected to the programme of environmental tests set out in this specification at a laboratory approved for the purpose by the Administration or by the competent authority of the manufacturer's home country.

3.2 Evidence of successful compliance with the environmental tests below should be submitted to the Administration by the manufacturer together with the application for type approval.

Test specification details

3.3 Equipment should operate satisfactorily on completion of each of the operating environment tests listed below.

Vibration tests

3.4 A resonance search should be made over the following ranges of oscillation frequency and amplitude:

.1 2 to 13.3 Hz with a vibration amplitude of 1 mm; and

.2 13.2 to 80 Hz with an acceleration amplitude of 0.7 g.

This search should be made in each of the three orthogonal planes at a rate sufficiently low to permit resonance detection.

3.5 The equipment should be vibrated in the above- mentioned planes at each major resonant frequency for a period of two hours.

3.6 In the absence of any resonant frequency, the equipment should be vibrated in each of the planes at 30 Hz with an acceleration of 0.7 g for a period of two hours.

3.7 After completion of the tests specified in paragraph 3.5 or 3.6 a search should again be made for resonance and there should be no significant change in the vibration pattern.

Temperature tests

3.8 Equipment that may be installed in exposed areas on the open deck, or in an enclosed space not environmentally controlled should be subjected, for a period of not less than two hours, to:

.1 a low temperature test at -25°C; and

.2 a high temperature test at 55°C.

3.9 Equipment that may be installed in an enclosed space that is environmentally controlled including an engine-room should be subjected, for a period of not less than two hours, to:

.1 a low temperature test at 0°C; and

.2 a high temperature test at 55°C.

3.10 At the end of each of the tests referred to in the subparagraphs above, the equipment should be switched on and it should function normally under the test conditions.

Humidity tests

3.11 Equipment should be left switched off for a period of two hours at a temperature of 55°C in an atmosphere with a relative humidity of 90%. At the end of this period, the equipment should be switched on and should operate satisfactorily for one hour under the test conditions.

Tests for protection against heavy seas

3.12 Equipment that may be installed in exposed areas on the open deck should be subjected to tests for protection against heavy seas in accordance with 1P 56 of publication IEC 529 or its equivalent.

Fluctuation in power supply

3.13 Equipment should operate satisfactorily with:

.1 a voltage variation of +/- 10% together with a simultaneous frequency variation of +/- 5%; and

.2 a transient voltage of +/- 20% together with a simultaneous frequency transient of +/- 10%, with a transient recovery time of three seconds.

Inclination test

3.14 The BWMS should be designed to operate when the ship is upright and when inclined at any angle of list up to and including 15° either way under static conditions and 22.5° under dynamic conditions (rolling) either way and simultaneously inclined dynamically (pitching) 7.5° by bow or stern. The Administration may permit deviation from these angles, taking into consideration the type, size and service conditions of the ship and operational functioning of the equipment. Any deviation permitted is to be documented in the Type Approval Certificate.

Reliability of electrical and electronic equipment

3.15 The electrical and electronic components of the equipment should be of a quality guaranteed by the manufacturer and suitable for their intended purpose.

PART 4 – SAMPLE ANALYSIS METHODS FOR THE DETERMINATION OF BIOLOGICAL CONSTITUENTS IN BALLAST WATER

Sample processing and analysis

4.1 Samples taken during testing of BWMS are likely to contain a wide taxonomic diversity of organisms, varying greatly in size and susceptibilities to damage from sampling and analysis.

4.2 When available, widely accepted standard methods for the collection, handling (including concentration), storage, and analysis of samples should be used. These methods should be clearly cited and described in test plans and reports. This includes methods for detecting, enumerating, and identifying organisms and for determining viability (as defined in these Guidelines).

4.3 When standard methods are not available for particular organisms or taxonomic groups, methods that are developed for use should be described in detail in test plans and reports. The descriptive documentation should include any experiments needed to validate the use of the methods.

4.4 Given the complexity in samples of natural and treated water, the required rarity of organisms in treated samples under regulation D-2, and the expense and time requirements of current standard methods, it is likely that several new approaches will be developed for the analyses of the composition, concen-

tration, and viability of organisms in samples of ballast water. Administrations/Parties are encouraged to share information concerning methods for the analysis of ballast water samples, using existing scientific venues, and papers distributed through the Organization.

Sample analysis for determining efficacy in meeting the discharge standard

4.5 Sample analysis is meant to determine the species composition and the number of viable organisms in the sample. Different samples may be taken for determination of viability and for species composition.

4.6 Viability of an organism can be determined through live/dead judgement by appropriate methods including, but not limited to: morphological change, mobility, staining using vital dyes or molecular techniques.

4.7 A treatment test cycle should be deemed successful if:

.1 it is valid in accordance with paragraph 2.2.2.5 or 2.3.36 as appropriate;

.2 the average density of organisms greater than or equal to 50 micrometres in minimum diameter in the replicate samples is less than 10 viable organisms per cubic metre;

.3 the average density of organisms less than 50 micrometres and greater than or equal to 10 micrometres in minimum diameter in the replicate samples is less than 10 viable organisms per millilitre;

.4 the average density of *Vibrio cholerae* (serotypes O1 and O139) is less than 1 cfu per 100 millilitres, or less than 1 cfu per 1 gramme (wet weight) zooplankton samples;

.5 the average density of *E. coli* in the replicate samples is less than 250 cfu per 100 millilitres; and

.6 the average density of intestinal *Enterococci* in the replicate samples is less than 100 cfu per 100 millilitres.

4.8 It is recommended that a non-exhaustive list of standard methods and innovative research techniques be considered[4].

Sample analysis for determining eco-toxicological acceptability of discharge

4.9 Toxicity tests of the treated water discharge should be conducted in accordance with paragraphs 5.2.3 to 5.2.7 of the Procedure for approval of ballast water management systems that make use of Active Substances, as revised (resolution MEPC.169(57).

*** ***

[4] Suggested sources may include but not be limited to:

.1 The Handbook of Standard Methods For the Analysis of Water and Waste Water.

.2 ISO standard methods.

.3 UNESCO standard methods.

.4 World Health Organization.

.5 American Society of Testing and Materials (ASTM) standard methods.

.6 United States EPA standard methods.

.7 Research papers published in peer-reviewed scientific journals.

.8 MEPC documents.

APPENDIX

BADGE OR CIPHER *NAME OF ADMINISTRATION*

TYPE APPROVAL CERTIFICATE OF BALLAST WATER MANAGEMENT SYSTEM

This is to certify that the ballast water management system listed below has been examined and tested in accordance with the requirements of the specifications contained in the Guidelines contained in IMO resolution MEPC…(..). This certificate is valid only for the ballast water management system referred to below.

Ballast water management system supplied by ……

under type and model designation ……
and incorporating:

Ballast water management system manufactured by ……

to equipment/assembly drawing No. …… date ……

Other equipment manufactured by ……

to equipment/assembly drawing No. …… date ……

Treatment rated capacity …… m^3/h

A copy of this Type Approval Certificate, should be carried on board a vessel fitted with this ballast water management system at all times. A reference to the test protocol and a copy of the test results should be available for inspection on board the vessel. If the Type Approval Certificate is issued based on approval by another Administration, reference to that Type Approval Certificate shall be made.

Limiting Conditions imposed are described in the appendix to this document.

Official stamp

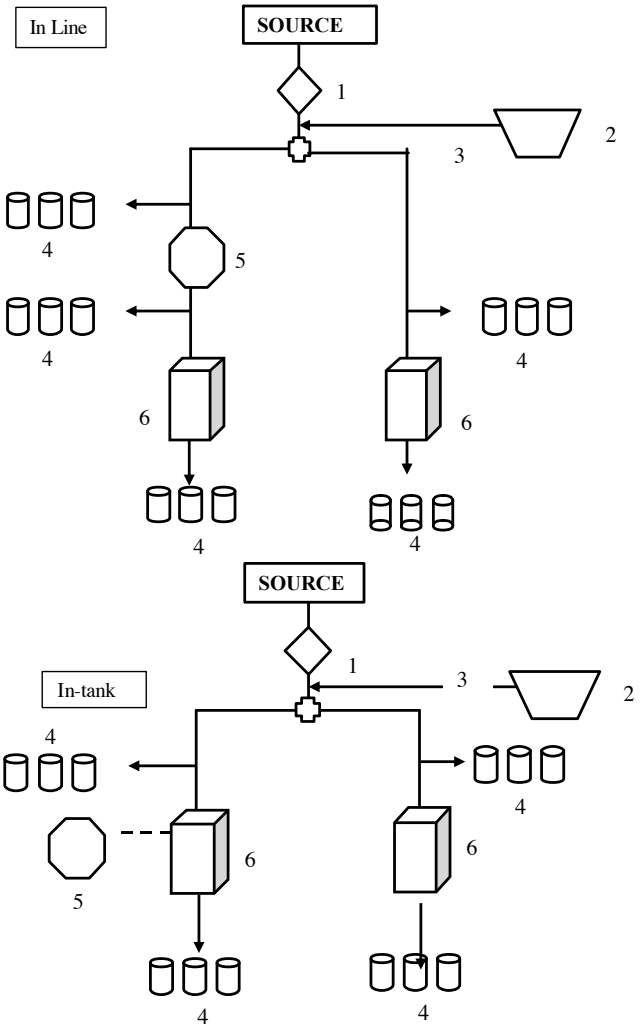
Signed ……

Administration of ……

Dated this …… day of……20……

Enc. Copy of the original test results.

Figure 1 Diagrammatic arrangement of possible land-based tests



1. Pump
2. Feed Tank
3. Feed Line
4. Sample tanks
5. Treatment System
6. Simulated Ballast Water Tank

RESOLUTION MEPC.169(57)

adopted on 4 April 2008

PROCEDURE FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES (G9)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

NOTING that regulation D-3.2 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 provides that ballast water management systems that make use of Active Substances or Preparations containing one or more Active Substances used to comply with this Convention, shall be approved by the Organization based on a Procedure developed by the Organization,

NOTING ALSO resolution MEPC.126(53) by which the Committee adopted the Procedure for Approval of ballast water management systems that make use of Active Substances (G9),

NOTING FURTHER that by resolution MEPC.126(53), the Committee resolved to keep the Procedure (G9) under review in the light of experience gained,

HAVING CONSIDERED, at its fifty-seventh session, the recommendation made by the Ballast Water Review Group,

1. ADOPTS the revised Procedure for approval of ballast water management systems that make use of Active Substances (G9), as set out in the Annex to this resolution;

2. INVITES Member Governments to give due consideration to the revised Procedure (G9) when evaluating ballast water management systems that make use of Active Substances before the submission of proposals for approval to the Committee;

3. AGREES to keep the revised Procedure (G9) under review in the light of experience gained;

4. URGES Member Governments to bring the aforementioned Procedure to the attention of manufacturers of ballast water management systems and other parties concerned with a view to encouraging its use;

5. REVOKES the Procedure adopted by resolution MEPC.126(53).

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ANNEX

PROCEDURE FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES (G9)

Contents

5 RISK CHARACTERIZATION

Screening for persistency, bioaccumulation and toxicity
Toxicity testing of the treated ballast water
Risk characterization and analysis

6 EVALUATION CRITERIA

Ship and personnel safety
Environmental protection

7 REGULATION OF THE USE OF ACTIVE SUBSTANCES AND PREPARATIONS

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Basic Approval
Final Approval
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Modification
Withdrawal of approval

Appendix - Approval Scheme for Active Substances or Preparations and ballast water management systems that make use of Active Substances

PROCEDURE FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES (G9)

1 INTRODUCTION

1.1 This procedure describes the approval and withdrawal of approval of ballast water management systems that make use of Active Substances to comply with the Convention and their manner of application as set out in regulation D-3 of the "International Convention for the Control and Management of Ships' Ballast Water and Sediments". The Convention requires that at withdrawal of approval, the use of the relevant Active Substance or Substances shall be prohibited within 1 year after the date of such withdrawal.

1.2 To comply with the Convention, ballast water management systems that make use of Active Substances or Preparations containing one or more Active Substances shall be approved by the Organization, based on a procedure developed by the Organization.

1.3 The objective of this procedure is to determine the acceptability of Active Substances and Preparations containing one or more Active Substances and their application in ballast water management systems concerning ship safety, human health and the aquatic environment. This procedure is provided as a safeguard for the sustainable use of Active Substances and Preparations.

1.4 This procedure is not intended for the evaluation of the efficacy of Active Substances. The efficacy of ballast water management systems that make use of Active Substances should be evaluated in accordance with the Guidelines for approval of ballast water management systems (G8).

1.5 The goal of the procedure is to ensure proper application of the provisions contained in the Convention and the safeguards required by it. As such the procedure is to be updated as the state of knowledge and technology may require. New versions of the procedure will be circulated by the Organization following their approval.

2 DEFINITIONS

2.1 For the purposes of this procedure, the definitions in the Convention apply and:

.1 "Active Substance" means a substance or organism, including a virus or a fungus that has a general or specific action on or against harmful aquatic organisms and pathogens.

.2 "Ballast Water Discharge" means the ballast water as would be discharged overboard.

.3 "Preparation" means any commercial formulation containing one or more Active Substances including any additives. This term also includes any Active Substances generated onboard for purposes of ballast water management and any relevant chemicals formed in the ballast water management system that make use of Active Substances to comply with the Convention.

.4 "Relevant Chemicals" means transformation or reaction products that are produced during and after employment of the ballast water management system in the ballast water or in the receiving environment and that may be of concern to the ship's safety, aquatic environment and/or human health.

3 PRINCIPLES

3.1 Active Substances and Preparations may be added to the ballast water or be generated on board ships by technology within the ballast water management system using an Active Substance to comply with the Convention.

3.2 Active Substances and Preparations accomplish their intended purpose through action on harmful aquatic organisms and pathogens in ships' ballast water and sediments. However, if the ballast water is still toxic at the time of discharge into the environment, the organisms in the receiving water may suffer unacceptable harm. Both the Active Substance or Preparation as well as the ballast water discharge should be subjected to toxicity testing in order to protect the receiving environment or human health from toxic effects due to the discharges. Toxicity testing is needed to determine if an Active Substance or Preparation can be used and under which conditions the potential of harming the receiving environment or human health is acceptably low.

3.3 Any system which makes use of, or generates, Active Substances, Relevant Chemicals or free radicals during the treatment process to eliminate organisms in order to comply with the Convention should be subject to this Procedure.

3.4 Ballast water management systems that make use of Active Substances and Preparations must be safe in terms of the ship, its equipment and the personnel to comply with the Convention.

3.5 The approval of Active Substances and Preparations using viruses or fungi for use in ballast water management systems is not addressed in this procedure. The approval of such substances for ballast water management should require an additional consideration by the Organization in compliance with regulation D-3 of the Convention if the use of such substances is proposed.

3.6 Administrations should check the quality and completeness of any Basic Approval or Final Approval submission, against the latest version of the Methodology for information gathering and the conduct work of the Technical Group agreed by the Organization, prior to its submission to the MEPC.

4 GENERAL REQUIREMENTS

4.1 Identification

4.1.1 The proposal for approval of an Active Substance or a Preparation should include a chemical identification and description of the chemical components even if generated on board. A chemical identification should be provided for any Relevant Chemicals.

4.2 Data-set for Active Substances and Preparations

4.2.1 A proposal for approval should include information on the properties or actions of the Preparation including any of its components as follows:

.1 Data on effects on aquatic plants, invertebrates, fish, and other biota, including sensitive and representative organisms:

- acute aquatic toxicity;
- chronic aquatic toxicity;
- endocrine disruption;
- sediment toxicity;
- bioavailability/biomagnification/bioconcentration; and
- food web/population effects.

.2 Data on mammalian toxicity:

- acute toxicity;
- effects on skin and eye;
- chronic and long-term toxicity;
- developmental and reproductive toxicity;
- carcinogenicity; and
- mutagenicity.

.3 Data on environmental fate and effect under aerobic and anaerobic conditions:

- modes of degradation (biotic; abiotic);
- bioaccumulation, partition coefficient, octanol/water coefficient;
- persistence and identification of the main metabolites in the relevant media (ballast water, marine and fresh waters);
- reaction with organic matter;
- potential physical effects on wildlife & benthic habitats;
- potential residues in seafood; and
- any known interactive effects.

.4 Physical and chemical properties for the Active Substances and Preparations and the treated ballast water, if applicable:

- melting point;
- boiling point;
- flammability;

- density (relative density);
- vapour pressure, vapour density;
- water solubility/dissociation constant (pKa);
- oxidation/reduction potential;
- corrosivity to the materials or equipment of normal ship construction;
- autoignition temperature; and
- other known relevant physical or chemical hazards.

.5 Analytical methods at environmentally relevant concentrations.

4.2.2 A proposal for approval should include the above data set either for the Preparation or for each component separately, and a list of the name and relative quantities (in volumetric percentages) of the components should be also attached. As described in section 8.1, all proprietary data should be treated as confidential.

4.2.3 The tests for Active Substances and Preparations should be carried out in accordance with internationally recognized guidelines[1].

4.2.4 The testing process should contain a rigorous quality control/quality assurance programme consisting of:

.1 Both a Quality Management Plan (QMP) and a Quality Assurance Project Plan (QAPP). Guidance on preparation of these plans, along with other guidance documents and other general quality control information are available for download from the International Organization for Standardization (ISO) (www.iso.org).

.2 The QMP addresses the quality control management structure and policies of the Test Organization (including subcontractors and outside laboratories).

.3 The QAPP is a project specific technical document reflecting the specifics of the system to be tested, the test facility, and other conditions affecting the actual design and implementation of the required experiments.

4.2.5 Dossiers already used for registration of chemicals can be submitted by the applicant to satisfy the required data needed for the evaluation of Active Substances and Preparations according to this procedure.

4.2.6 The proposal should describe the manner of application of the Preparation for ballast water management, including required dosage and retention time.

4.2.7 A proposal for approval should include (Material) Safety Data Sheets ((M)SDS).

4.3 Assessment report

4.3.1 A proposal for approval should include an assessment report. The assessment report should address the quality of the test reports, the risk characterization and a consideration of the uncertainty associated with the assessment.

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[1] Preferably Organization for Economic Co-operation and Development (OECD) Guidelines for Testing of Chemicals (1993) or other equivalent tests.

5 RISK CHARACTERIZATION

5.1 Screening for persistency, bioaccumulation and toxicity

5.1.1 An assessment on the intrinsic properties of the Active Substance and/or Preparation such as persistency, bioaccumulation and toxicity should be conducted (see Table 1 in section 6).

.1 Persistence tests:
Persistence should preferably be assessed in simulation test systems that determine the half-life under relevant conditions. Biodegradation screening tests may be used to show that the substances are readily biodegradable. The determination of the half-life should include assessment of relevant chemicals.

.2 Bioaccumulation tests:
The assessment of the (potential for) bioaccumulation should use measured bioconcentration factors in marine (or freshwater) organisms. Where these tests are not applicable, or if logPow <3, Bio Concentration Factor (BCF) values may be estimated using (Quantitative) Structure-Activity Relationship ((Q)SAR) models.

.3 Toxicity tests:
Acute and/or chronic ecotoxicity data, ideally covering the sensitive life stages, should in principle be used for the assessment of the toxicity criterion.

5.2 Toxicity testing of the treated ballast water

5.2.1 Toxicity testing is necessary for the Active Substance, or Preparations (see sections 4.2.1 and 5.3) and the treated ballast water discharge as covered in this section. The advantage of conducting toxicity testing on the ballast water discharge is that it integrates and addresses the potential for interactions of the Active Substances and Preparations with the possible by-products:

.1 For the Basic Approval process, the discharge testing should be performed in a laboratory using techniques and equipment to simulate ballast water discharge following treatment by the Preparation.

.2 For Final Approval, the discharge testing should be performed as part of the land-based type approval process using the treated ballast water discharge.

5.2.2 The applicant should provide both acute and chronic toxicity test data using standardized test procedures to determine the toxicity of the Preparation and Relevant Chemicals as used in conjunction with the ballast water management system. This testing approach should be performed on the treated ballast water discharge, as the ballast water management system could either mitigate or enhance the adverse effects of the Preparation or Relevant Chemicals.

5.2.3 The discharge toxicity tests should be conducted on samples drawn from the land-based test set-up, which would be representative of the discharge from the ballast water management system.

5.2.4 These toxicity tests should include chronic test methods with multiple test species (a fish, an invertebrate and a plant) that address the sensitive life-stage. The preference is to include both a sub-lethal endpoint (growth) and a survival endpoint. Either freshwater or marine test methods should be tested[1].

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[1] Currently there is no compelling physiological or empirical proof that marine organisms are more sensitive than freshwater organisms or vice versa. Should this however be demonstrated for the substance under consideration, this should be taken into account.

5.2.5 The test results to be provided include: acute 24-hour, 48-hour, 72-hour, and 96-hour Lethal Concentration at which x% of the test organisms die (LCx), No Observed Adverse Effect Concentrations (NOAECs), chronic No Observed Effect Concentration (NOEC) and/or Effect Concentration at which x% of test organisms show effect (ECx), as appropriate based on the experimental design.

5.2.6 A dilution series including a 100% ballast water discharge would be tested to determine the no adverse effect level using the statistical endpoints (NOEC or ECx). An initial analysis could use a conservative approach where the dilution capacity would not be taken into consideration (no modelling or plumes analysis would be used). The rationale for taking a conservative approach is that there could be multiple discharges into one location (even though this is not necessarily the case).

5.2.7 The acute and chronic toxicity test data in conjunction with the information in section 4.2.1 should be used to determine the holding time necessary to achieve the no adverse effect concentration upon discharge. Knowing the half-life (days), decay rate, dosage rate, volume of system and toxicity tests with time series, then a computational model can be used to determine the amount of time needed to hold the treated ballast water before discharge.

5.2.8 Information on Total Residual Oxidants (TRO) and Total Residual Chlorine (TRC) should be provided as part of the application for evaluation, for both the ballast water treatment process and the ballast water discharge.

5.3 Risk characterization and analysis

5.3.1 For the Basic Approval process, fate and effect testing should be performed in the laboratory with Active Substances and Preparations. This section lists information that could be useful for a preliminary risk characterization.

5.3.2 Both the Active Substance or Preparation as well as the treated ballast water discharge should be subject to toxicity testing in order to protect the receiving environment from toxic effects due to discharges.

5.3.3 The reaction with organic matter of Active Substances and Preparations that produce free radicals, should be addressed qualitatively so as to identify products of concern to the environment.

5.3.4 The rate and route of abiotic and biotic degradation of the Active Substances and Preparations under aerobic and anaerobic conditions should be assessed, resulting in the identification of relevant metabolites in the relevant media (ballast water, marine and fresh waters).

5.3.5 The rate of abiotic and biotic degradation of the Active Substances and Preparations under aerobic and anaerobic conditions should be assessed, resulting in the characterization of the persistence of the Active Substances, Preparations and Relevant Chemicals in terms of degradation rates under specified conditions (e.g., pH, redox, temperature).

5.3.6 The partition coefficients (solids-water partition coefficient (Kd) and/or organic carbon normalized distribution coefficient (Koc)) of the Active Substances, Preparations and Relevant Chemicals should be determined.

5.3.7 For Active Substances and Preparations, the potential for bioaccumulation should be assessed in marine or freshwater organisms (fish or bivalves) if the logarithm octanol/water partition coefficient (logPow) is >3.

5.3.8 Based on the information on fate and behaviour of Active Substances and Preparations, the discharge concentrations at selected time intervals should be predicted.

5.3.9 The effect assessment of the Active Substances, Preparations and Relevant Chemicals is initially

based on a dataset of acute and/or chronic ecotoxicity data for aquatic organisms, being primary producers (algae or sea grasses), consumers (crustaceans), predators (fish), and should include secondary poisoning to mammalian and avian top-predators, as well as data for sediment species.

5.3.10 An assessment of secondary poisoning is redundant if the substance of concern demonstrates a lack of bioaccumulation potential (e.g., BCF <500 L/kg wet weight for the whole organism at 6% fat).

5.3.11 An assessment of sediment species is redundant if the potential of the substance of concern to partition into the sediment is low (e.g., Koc <500 L/kg).

5.3.12 The effect assessment of the Active Substances, Preparations and Relevant Chemicals should include a screening on carcinogenic, mutagenic and endocrine disruptive properties. If the screening results give rise to concerns, this should give rise to a further effect assessment.

5.3.13 The effect assessment of the Active Substances, Preparations and Relevant Chemicals, taking the indicated information into account, should be based on internationally recognized guidance[1].

5.3.14 The results of the effect assessment are compared to the results of the discharge toxicity testing. Any unpredicted results (e.g., lack of toxicity or unexpected toxicity in the discharge assessment) should give rise to a further elaboration on the effect assessment.

5.3.15 An analytical method suitable for monitoring Active Substances and Preparations in ballast water discharges should be available.

6 EVALUATION CRITERIA

The Organization should evaluate the application for approval based on the criteria in this section.

6.1 The information that has been provided should be complete, of sufficient quality and in accordance with this Procedure.

6.2 That this information does not indicate possible unacceptable adverse effects to environment, human health, property or resources.

6.3 Ship and personnel safety

6.3.1 In order to protect the ship and personnel safety the Technical Group should evaluate the physical and chemical hazards (see paragraph 4.2.1.4) to ensure that potential hazardous properties of the Active Substances, Preparations or Relevant Chemicals formed in the treated ballast water should not create any unreasonable risk to the ship and personnel. Proposed procedures for the use and technical equipment introduced needs to be taken into account.

6.3.2 For the protection of personnel involved in the handling and storage of the Active Substances and Preparations, the proposal should include relevant ((M)SDS). The Organization should evaluate (M)SDS, mammalian toxicity data and chemical properties hazards (see paragraphs 4.2.1.2 and 4.2.1.4) and ensure that potential hazardous properties of the Active Substances, Preparations or Relevant Chemicals should not create any unreasonable risk to the ship or personnel. This evaluation should take into account the different circumstances that a ship or personnel may face in its trade (e.g., ice, tropical, humidity, etc.).

6.3.3 A Human Exposure Scenario (HES) should be provided by the applicant as part of the Risk Assessment procedure for ballast water management systems.

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[1] Such as relevant OECD guidelines or equivalent.

6.4 Environmental protection

6.4.1 In order to approve the application, the Organization should determine that the Active Substances, Preparations or Relevant Chemicals are not Persistent, Bioaccumulative and Toxic (PBT). Preparations that exceed all these criteria (Persistence, Bioaccumulation and Toxicity) in the table below are considered PBT.

Table 1 Criteria for identification of PBT substances

Criterion	**PBT criteria**
Persistence	Half-life: > 60 days in marine water, or > 40 days in freshwater*, or > 180 days in marine sediment, or > 120 days in freshwater sediment*
Bioaccumulation	BCF > 2,000 or $Log_{Poctanol/water} \geq 3$
Toxicity	Chronic NOEC < 0.01 mg/l

**For the purpose of marine environmental risk assessment half-life data in freshwater and freshwater sediment can be overruled by data obtained under marine conditions.*

6.4.2 The Organization should determine the overall acceptability of the risk the Preparation may pose in its use for ballast water management. It should do so by comparing the information provided and the undertaken assessment of PBT and the discharge with scientific knowledge of the Active Substances, Preparations and Relevant Chemicals concerned. The risk evaluation should qualitatively take into account cumulative effects that may occur due to the nature of shipping and port operations.

6.4.3 The risk evaluation should consider the uncertainties involved in the application for approval, and as appropriate, provide advice on how these uncertainties can be dealt with.

6.4.4 An Emission Scenario Document (ESD) should be provided by the applicant as part of the Risk Assessment procedure for ballast water management systems. The ESD should be based on the worst-case discharge scenario and should be regarded as the first stage of a stepped approach to the development of a full ESD, when more data on potential discharges and technologies becomes available.

7 REGULATION OF THE USE OF ACTIVE SUBSTANCES AND PREPARATIONS

7.1 Handling of Active Substances and Preparations

7.1.1 The proposal for approval of Active Substances and Preparations should include information on their intended use and application. The quantity of Active Substances and Preparations to be added to the ballast water and the maximum allowable concentration of the Active Substances therein should be described in the instructions provided by the manufacturer. The system should ensure that the maximum dosage and maximum allowable discharge concentration are not exceeded at any time.

7.1.2 An assessment should be undertaken to ensure the safe on-board handling and storage of chemicals used to treat ballast water, using the existing IMO Conventions, Codes and guidance as a basis.

7.2 Hazard documentation and labelling

7.2.1 The proposal should include ((M)SDS) as required. The (M)SDS should describe appropriate stor-

age and handling together with the effects of degradation and chemical reactivity during storage and should be included in the instructions provided by the manufacturer.

7.2.2 Documentation of hazards or the (M)SDS should conform to the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and the relevant IMO regulations (e.g., the IMDG Code) and guidelines (e.g., the GESAMP Hazard Evaluation Procedure). Where these regimes are not applicable, relevant national or regional regimes should be followed.

7.3 Procedures and use

7.3.1 Detailed procedures and information for safe application of Active Substances and Preparations on board should be developed and supplied, taking into consideration existing IMO Conventions, Codes and guidance. The procedures should comply with the approval conditions such as maximum allowable concentration and maximum discharge concentration, if any.

8 APPROVAL

8.1 Basic Approval

8.1.1 All proprietary data should be treated as confidential by the Organization and its Technical Group, the Competent Authorities involved, and the evaluating regulatory scientists, if any. However, all information related to safety and environmental protection, including physical/chemical properties, environmental fate and toxicity, should be treated as non-confidential.

8.1.2 Procedure to be followed:

.1 The manufacturer should evaluate the Active Substances or Preparations and the potential discharge in accordance with the approval criteria specified in this procedure.

.2 Upon completion, the manufacturer should prepare an Application on the Active Substances and Preparations and submit it to the Member of the Organization concerned. An application should only be made once the ballast water management system, Active Substance or Preparation has been sufficiently designed, progressed and tested to provide the full data necessary for a Basic Approval.

.3 The Administration having received a satisfactory application should as soon as possible propose an approval to the Organization.

.4 Members of the Organization may propose an approval.

.5 The Organization should announce and set the time frame for the evaluation of Active Substances and Preparations.

.6 Parties, Members of the Organization, the United Nations and its Specialized Agencies, intergovernmental organizations having agreements with the Organization and non-governmental organizations in consultative status with the Organization may submit information that is relevant to the evaluation.

.7 The Organization should establish a Technical Group in accordance with its rules of procedure ensuring that proprietary data should be treated as confidential.

.8 The Technical Group should review the comprehensive proposal along with any additional data submitted and report to the Organization whether the proposal has demonstrated a potential for unreasonable risk for environment, human health, property or resources in accordance with the criteria specified in this procedure.

.9 The Technical Group's report should be in written form and circulated to the Parties, Members of the Organization, the United Nations and its Specialized Agencies, intergovernmental organizations having agreements with the Organization and non-governmental organizations in consultative status with the Organization, prior to its consideration by the competent Committee.

.10 The Committee of the Organization should decide whether to approve any proposal, introduce any modifications thereto, if appropriate, taking into account the Technical Group's report.

.11 The Member of the Organization that submitted the application to the Organization should inform in writing the applicant about the decision made with regard to the respective Active Substance or Preparation and their manner of application.

.12 Active Substances or Preparations receiving Basic Approval by the Organization may be used for prototype or type approval testing based on the guidelines developed by the Organization[2]. Subject to evaluation against the criteria developed by the Organization, an Active Substance or Preparation may be used for Prototype or Type Approval testing for the approval of different BWMS.

.13 An applicant seeking to take advantage of an Active Substance or Preparation's Basic Approval should provide in its application a written agreement from the applicant whose Active Substance or Preparation has been granted the initial Basic Approval.

8.2 Final Approval

8.2.1 In accordance with regulation D-3.2, a ballast water management system using an Active Substance or Preparation to comply with the Convention (which received Basic Approval) must be approved by the Organization. For this purpose, the Member of the Organization submitting an application should conduct the Type Approval tests in accordance with Guidelines for approval of ballast water management systems (G8). The results should be conveyed to the Organization for confirmation that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval. This would result in Final Approval of the ballast water management system in accordance with regulation D-3.2. Active Substances or Preparations that have received Basic Approval by the Organization may be used for evaluation of ballast water management systems using Active Substances or Preparations for Final Approval.

8.2.2 It is to be noted that from the Guidelines (G8) land-based testing only the results of the residual toxicity tests should be included in the proposal for Final Approval in accordance with Procedure (G9). All other Guidelines (G8) testing remains for the assessment and attention of the Administration. Although Basic Approval under Procedure (G9) should not be a pre-requisite of Type Approval testing, as an Administration can regulate discharges from its own ships in its own jurisdiction. Basic Approval would still be required, and the specific technology could not be used in vessels in another jurisdiction without Basic Approval.

8.2.3 It should be noted that once a system has received Final Approval under this Procedure, then the respective applicant should not have to retrospectively submit new data if there is a change in the Methodology agreed by the Organization.

8.3 Notification of approval

8.3.1 The Organization will record the Basic and Final Approval of Active Substances and Preparations and ballast water management systems that make use of Active Substances and circulate the list once a year including the following information:

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2 Guidelines for approval and oversight of prototype ballast water treatment technologies (G10) and Guidelines for approval of Ballast Water Management Systems (G8).

- Name of ballast water management system that make use of Active Substances and Preparations;
- Date of approval;
- Name of manufacturer; and
- Any other specifications, if necessary.

8.4 Modification

8.4.1 Manufacturers should report any modifications in names, including trade and technical name, composition or use of the Active Substances and Preparations in the ballast water management systems approved by the Organization, to the Member of the Organization. The Member of the Organization should inform the Organization accordingly.

8.4.2 Manufacturers intending to significantly change any part of a ballast water management System that has been approved by the Organization or the Active Substances and Preparations used in it should submit a new application.

8.5 Withdrawal of approval

8.5.1 The Organization may withdraw any approval in the following circumstances:

.1 If the Active Substances and Preparations or ballast water management system that make use of Active Substances no longer conforms to requirements due to amendments of the Convention.

.2 If any data or test records differ materially from data relied upon at the time of approval and are deemed not to satisfy the approval condition.

.3 If a request for withdrawal of approval is made by the Member of the Organization on behalf of the manufacturer.

.4 If unreasonable harm to environment, human health, property or resources is demonstrated by any Member of the Organization or observer to have been caused by the approved ballast water management system that make use of Active Substances or Preparations.

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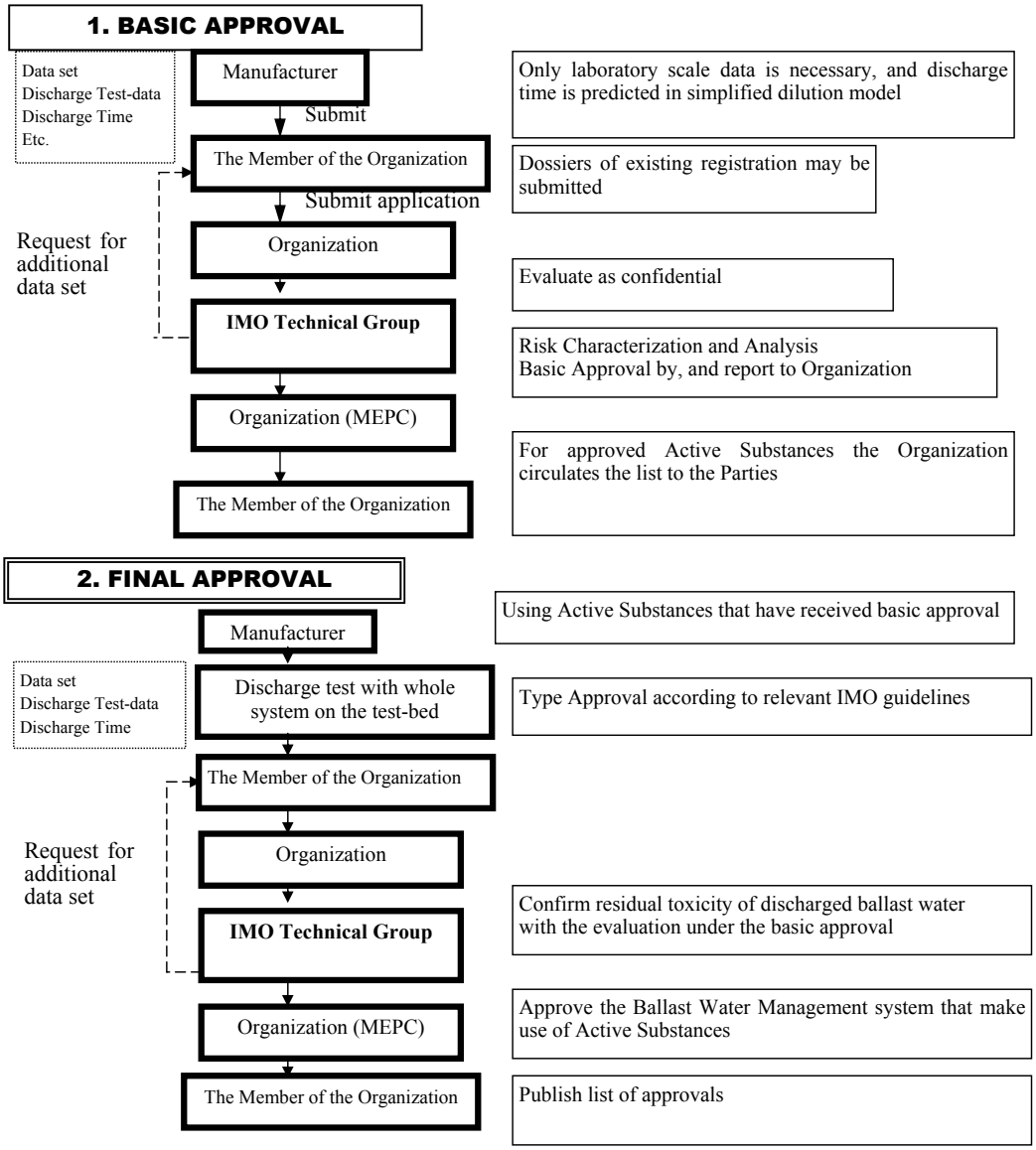
Appendix

Approval Scheme for Active Substance or Preparation and Ballast Water Management systems that make use of Active Substances



RESOLUTION MEPC.140(54)
adopted on 24 March 2006

GUIDELINES FOR APPROVAL AND OVERSIGHT OF PROTOTYPE BALLAST WATER TREATMENT TECHNOLOGY PROGRAMMES (G10)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that regulation D-4.3 of the Ballast Water Management Convention provides that, in establishing and carrying out any programme to test and evaluate promising Ballast Water technologies, Parties shall take into account Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED, at its fifty-fourth session, the draft Guidelines for approval and oversight of prototype ballast water treatment technology programmes developed by the Ballast Water Working Group,

1. ADOPTS the Guidelines for approval and oversight of prototype ballast water treatment technology programmes as set out in the annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX
GUIDELINES FOR APPROVAL AND OVERSIGHT OF PROTOTYPE BALLAST WATER TREATMENT TECHNOLOGY PROGRAMMES (G10)

Content

GUIDELINES FOR APPROVAL AND OVERSIGHT OF PROTOTYPE BALLAST WATER TREATMENT TECHNOLOGY PROGRAMMES (G10)

1 INTRODUCTION

General

1.1 These Guidelines provide recommendations for Administrations on the approval and oversight of programmes for prototype ballast water treatment technologies in accordance with regulation D-4 of the "International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004" (the Convention). The intention of regulation D-4 is to provide opportunities to test and evaluate promising ballast water treatment technologies aboard ships with the potential to meet or exceed the performance standards in regulation D-2 of the Convention. The document may also assist manufacturers, ship owners and other stakeholders undertaking development activities in the area of ballast water treatment. The Guidelines also make recommendations on criteria for approval of such programmes. Recommendations outlined in these Guidelines should be applied in an objective, consistent and transparent way and their application should be evaluated periodically by the Organization.

1.2 Regulations referred to in these Guidelines are those contained in the Convention.

1.3 The Guidelines include general recommendations on design and construction, technical procedures for overall performance testing and evaluation, procedures for the issuance of a Statement of Compliance in accordance with regulation D-4 and Administration oversight responsibilities.

1.4 As the level of ballast water management knowledge, experience and subsequently technological achievements continue to develop, these Guidelines may require updating. Periodical review of their content in light of such developments should be carried out and any revisions duly circulated by the Organization.

Purpose

1.5 The main purpose of these Guidelines is to:

.1 assist Administrations to approve or reject proposed programmes and in cases where approval is granted, to issue a Statement of Compliance under regulation D-4;

.2 describe the responsibilities of the Administration in the oversight of the programme's execution; and

.3 encourage a uniform interpretation and application of regulation D-4.

Applicability

1.6 These Guidelines apply to programmes established to test and evaluate promising ballast water treatment technologies in accordance with regulation D-4.

Programme requirements

1.7 The Programme for prototype ballast water treatment technologies in accordance with these Guidelines should contain the following three main steps:

.1 **Programme Application, Submission and Approval**: The submission should include a detailed plan describing the prototype technology and implementation of the programme as described in Section 3. Further, the applicant should include evidence on the potential of the prototype technologies meeting or exceeding the performance standard in regulation D-2. If the prototype ballast water treatment technology makes use of Active Substances, or preparations containing one or more Active Substances, the substances should have received Basic Approval, as described by the Procedure for the Approval of Ballast Water Management systems that make use of Active Substances (G9). All of the above information should be the basis for the Administration in its evaluation and approval of the submitted programme. In the case where a programme is approved, the applicant may proceed in accordance with the approved programme taking into account any conditions set by the Administration.

.2 **Installation Survey and Statement of Compliance**: The installation of the prototype ballast water treatment technology in accordance with the approved Programme should be verified by an installation survey. Provided that this survey confirms adherence to the approved programme, including any applicable conditions set by the Administration, a Statement of Compliance under regulation D-4 may be issued by the Administration.

.3 **Performance Evaluations and Reporting**: During the test and evaluation period, a prototype ballast water treatment technology should be subjected to on-going experimental testing and evaluation according to the approved programme to evaluate both the engineering and biological performance under shipboard operating conditions. Reporting to the Administration should be of the form and schedule in accordance with the approved programme.

2 DEFINITIONS

2.1 Prototype Ballast Water Treatment Technology - means any integrated system of ballast water treatment equipment as under regulation D-4, participating in a programme for testing and evaluation with the potential of meeting or exceeding the ballast water performance standard in regulation D-2 including treatment equipment, all associated control equipment, monitoring equipment and sampling facilities. A prototype ballast water treatment technology may be a mechanical, physical, chemical, or biological unit process, either singularly or in combination that may or may not use Active Substances that remove, render

harmless, or avoid the uptake or discharge of Harmful Aquatic Organisms and Pathogens within ballast water and sediments. Prototype ballast water treatment technologies may operate at the uptake or discharge of ballast water, during the voyage or in any combination of these phases.

2.2 Ballast Water Management Plan - is the document referred to in regulation B-1 of the Convention describing the ballast water management processes and procedures on board individual ships.

2.3 Active Substances - means a substance or organism, including a virus or a fungus that has a general or specific action on or against Harmful Aquatic Organisms and Pathogens.

2.4 Control Equipment - refers to the installed equipment required for proper functioning of the prototype ballast water treatment technology.

2.5 Monitoring Equipment - refers to the equipment installed for assessment of the correct operation of the prototype ballast water treatment technology.

2.6 Convention - means the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004.

2.7 Sampling Facilities - refers to the means provided for sampling treated or untreated ballast water as needed in these Guidelines.

3 PROGRAMME APPLICATION REQUIREMENTS

3.1 This section provides the detailed elements and documentation that should be included in a Programme and Programme Application as defined in section 1.7.1. The Programme Application should contain information on the following aspects:

.1 participants
.2 ballast water treatment technology description
.3 ship description
.4 installation and installation survey description
.5 performance test and evaluation description
.6 time schedule and reporting

3.2 All relevant and requested documentation describing the Programme for which the applicant is applying for approval should be submitted to the Administration. The application should only encompass one prototype ballast water treatment technology and should not normally result in installations in more than three ships. Prototype installations onboard more than one ship should be justified in the application and may rest upon technology development requirements related to, for example:

- capacity issues;
- geographical areas of operation;
- specific onboard conditions varying as a function of ship type; and
- refit to existing vessels versus installations onboard new vessels.

3.3 The Programme Application should also take into account safety and environmental regulations which have to be met by the ship so as to ensure that other international and/or national requirements are not compromised by the prototype ballast water treatment technology.

3.4 The Programme should implement appropriate quality control measures in accordance with recognized international standards to which all participants specified in Section 3.5 should be required to comply.

Participants

3.5 The Programme should provide an overview of the different participants included in the Programme Application including, as appropriate:

- the ship owner or operator;
- he manufacturer(s); and
- the testing institution or any laboratories, institution(s) or companies carrying out elements of or the entire programme or advising the manufacturer in carrying out the programme.

3.6 The roles and responsibilities of each of the identified participants should be clearly described within the Programme Application.

Ballast water treatment technology description

3.7 The Programme Application should include information regarding design, construction, operation and functioning of the proposed ballast water treatment technology. The information should also include any foreseen conditions limiting its application with respect to voyage duration, ship type, capacity (flow rate and/or volume) or any other such condition if relevant.

3.8 The Programme Application should contain documentation on the potential of the prototype technologies meeting or exceeding the performance standard in regulation D-2. Recognized scientific and statistical practices should have been utilized in the preparation of this documentation.

3.9 The construction, operation and maintenance of the technology should be adequately described to allow for consideration by the Administration and this should include:

.1 The prototype ballast water treatment technology should have a configuration and construction suitable for shipboard installation and normal onboard operation;

.2 Design, construction and material should be suitable for the purpose for which the equipment is intended, the working conditions to which it should be subjected and the environmental conditions onboard. This should include considerations of:

.1 vibration – to ensure that there are no potential resonance occurring;

.2 temperature – to assure safe and proper operations and performance of the technology over a range of temperatures applicable for shipboard installations;

.3 humidity – to ensure the suitability of equipment exposed to humidity/ water as applicable to shipboard installations;

.4 power fluctuation – to ensure proper functioning over a voltage/frequency variation; and

.5 inclination – to assure that the technology should operate during those scenarios it is intended for, taking into account the motion of the vessel and that it should remain safe and not represent any danger to crew or ship onboard during inclination.

.3 Routine maintenance of the prototype ballast water treatment technology and trouble-shooting procedures should be clearly described by the manufacturer in a operating and maintenance manual.

.4 The prototype ballast water treatment technology should be provided with simple and effective means for its operation and control.

.5 In case of a failure compromising the proper operation of the prototype ballast water treatment technology, audible and visual alarm signals are to be activated at all stations from where ballast water operations may be controlled.

.6 The prototype ballast water treatment technology programme should provide for record keeping of the entire ballast water operations including:

.1 record of operations and any malfunctioning during operations;

.2 record of all essential parameters necessary to ensure proper functioning;

.3 date and time of start and end of the ballast operation; and

.4 ballast operation mode (loading, discharge, transfer).

.7 The prototype ballast water treatment technology should allow for sampling such that representative samples of the ship's ballast water can be collected as described in the experimental design as described in the Programme Application.

3.10 The Programme Application should include descriptions of the working principles, use if any Active Substances, operational conditions and application feasibility of the prototype ballast water treatment technology.

3.11 The Programme Application should include an assessment of the potential effects upon other personnel, shipboard systems and structure, highlighting any special safety provisions than maybe necessary due to the characteristics of the installation and/or operation of the prototype ballast water treatment technology.

Ship description

3.12 The Programme Application should include a full and complete description of the ship(s) in which the prototype ballast water treatment technology is to be installed. This description should include:

- ships' name;
- date of construction;
- flag;
- port of registry;
- gross tonnage;
- dead weight;
- IMO number;
- length (bp);
- beam;
- international call sign;
- deepest ballast drafts (normal and heavy weather);
- total ballast capacity of the ship in cubic metres and other units if applicable to the ship.

3.13 The description should also include normal operational ballast flow rates and volumes, and, to the extent possible, typical voyage lengths and routes.

Installation and installation survey description

3.14 The Programme Application should fully describe the manner in which the equipment should be integrated into the ship and should provide the following for the onboard installation:

.1 process flow diagram of the prototype ballast water treatment technology;

.2 "equipment arrangement" drawings of the proposed prototype ballast water treatment installation. These should show scaled lay-outs of the spaces and important mechanical and structural features such as major propulsion and electrical components, bulkheads and pillars, and doors and other means of access/egress;

.3 "piping arrangement" drawing of the prototype ballast water treatment system installation, including ballast and cross-connected piping systems, sample piping, and the operational outlets for treated effluent and any waste streams;

.4 information relating to onboard safety matters;

.5 an assessment of the potential effects upon other shipboard systems and the ship's structure, highlighting those aspects of the design and operation of the system, and its integration into the ship, to be put in place to prevent any compromises to crew and ship safety;

.6 assurance of adequate safety interlocks and failsafe measures to ensure subdivision boundaries, structural integrity, and vessel stability are not compromised;

.7 assurance that new piping and flows should not result in unsafe ballasting or deballasting situations, e.g., overpressure;

.8 assurance that escape arrangements in manned spaces are not compromised;

.9 arrangements for maintaining the integrity any boundary between safe and hazardous spaces;

.10 attention to restrictions related to the use of electrical equipment in hazardous areas; and

.11 a provision for safe storage and use of Active Substances.

3.15 The installation survey description should contain a listing of those items which should be validated at the survey and these include, as a minimum, the following:

.1 updated, as-installed diagrammatic drawings of any additional pumping and piping arrangements, identifying the operational outlets for treated effluent and any waste streams. Special consideration may have to be given to installations on ships that have unusual pumping and piping arrangements, as well as restrictions related to the use of electrical equipment in hazardous areas;

.2 equipment manuals, supplied by manufacturers, which should contain details of the major components of the treatment system;

.3 operations and technical manual for the complete installed prototype ballast water treatment. This manual should cover the arrangements and operation of the system as a whole and should specifically describe the parts of the system which may not be covered by the manufacturer's equipment manuals. The operations section of the manual should include normal operational procedures and procedures for the discharge of untreated water in the event of malfunction of the equipment. The technical section of the manual should include adequate information (description and diagrammatic drawings of the pumping and piping arrangements, of the monitoring system and electrical/electronic wiring diagrams) to enable fault finding and should include instructions for keeping a maintenance record;

.4 the installation should comply with manufacturer's specific installation criteria. A technical installation specification defining, inter alia, the location and mounting of components, arrangements for maintaining the integrity of any boundary between safe and hazardous spaces, and the arrangement of the sample piping;

.5 the Ballast Water Management Plan; and

.6 any other conditions required by the Administration.

3.16 The Programme Application should provide a recommended test and survey procedure. This procedure should specify all the checks to be carried out in a functional test and should provide guidance for the surveyor when carrying out the on-board survey of the treatment system. This procedure may be amended as necessary prior to the survey and with the concurrence of the Administration.

Performance test and evaluation description

3.17 A full description of the onboard tests and evaluations to be undertaken should be provided. When available standard methods for the collection, handling (including concentration), storage, and analysis of samples should be applied. These methods should be clearly referenced and described in test plans and in reports. This includes methods for detecting, concentrating, enumerating, and identifying organisms and for determining viability. When non-standard methods are used they should be validated, documented and reported. A description of the experimental design and sampling procedure should be provided.

3.18 The Programme should evaluate:

.1 the biological efficacy of the installed prototype ballast water treatment technology;

.2 the operational performance which should include, but not be limited to:

- unplanned maintenance and manning requirements
- operational data relative to manufacturer's specification
- consideration of the environmental conditions identified in section 3.9.2;

.3 the effects upon the ship's systems and structure; and

.4 any other characteristics identified by the participants or the Administration.

3.19 Experimental Design and Protocols should include:

.1 a general description of the experimental test including the experimental hypotheses being tested and methods for the determination of biological efficacy and operational performance. The Programme Application should identify the test locations, source waters, and relevant environmental water conditions, to the extent possible. The overall study plan should take full advantage of the range of locations provided by the vessel's operations, to the extent practicable;

.2 a detailed description for each of the experiments including:

.1 ballast water sample collection for each treatment and control, identification and number of replicate tanks, ballast water samples and time points encompassed in the test;

.2 description of test runs: replicate tests (tests at same location and environmental conditions) and comparative tests (tests at different locations or environmental conditions). Description of how the efficacy of the treatment process should be evaluated; include a description of how the efficacy should be quantified, as well as a description of the comparison of biological efficacies;

.3 the plan should address statistical analysis (including power analysis) and data confidence issues. Fully describe the intended statistical tests, use of controls, and replicates for each experiment; and

.4 how the experiment accounts for the range of seasons, organic matter content, turbidity, pH, salinity, etc. likely to be encountered in operation and, to the extent possible, describe the range of these variables;

.3 the experimental design should address the operation of the ship's systems whose arrangements (e.g., cross connections) have the potential to confound the resulting data.

Time schedule and reporting

3.20 The Programme Application should include procedures and schedules for reporting the progress and status of the Programme through all phases. Reporting to the Administration should occur on a regular

basis throughout the Programme. In addition, reporting should include the results and evaluation of all conducted experiments.

3.21 The Programme Application should present an overall time schedule compliant with project management standards. This schedule should include an estimation of major task element time lines. Each of these should have an anticipated period of performance and execution and include events such as approval of the Programme by the Administration, the installation survey, experimental and progress reports. Major task elements should include the installation of the prototype ballast water treatment technology into the ship, initiation and execution of experiments and maintenance periods.

4 INSTALLATION SURVEY AND STATEMENT OF COMPLIANCE

Installation survey

4.1 Following approval of the Programme Application, the Programme may proceed to installing the onboard prototype ballast water treatment technology.

4.2 Following installation a survey should be performed by the Administration, or any designated body appointed by the Administration to act on its behalf, to verify that the system installation has been carried out in accordance with the approved Programme and that the workmanship of the installation is satisfactory.

Statement of Compliance

4.3 Upon successful completion of the Installation Survey a Statement of Compliance may be issued by the Administration, or by a person or organization duly authorized by the Administration. In every case, the Administration assumes full responsibility for the Statement of Compliance. The recommended format for the Statement of Compliance is given in the Appendix.

4.4 The Statement of Compliance should be valid until five years after the dates specified in regulations D-4.1 and D-4.2, as appropriate.

5 PERFORMANCE REQUIREMENT FOR ALREADY INSTALLED SYSTEMS

5.1 Ships with already installed prototype ballast water treatment technologies that wish to make use of the provision of regulation D-4, may do so provided that a Programme Application is approved by the Administration.

6 PROGRAMME OVERSIGHT

6.1 The Administration or any designated body appointed by the Administration to act on its behalf should ensure that the Programme as approved is followed.

6.2 The Administration should revoke the Statement of Compliance if the ship fails to follow the approved Programme or otherwise does not comply with the conditions of regulation D-4.4.

* *

APPENDIX 1

Statement of Compliance for a Prototype Ballast Water Treatment Technology

(Official seal)

Issued under the provisions of

GUIDELINES FOR APPROVAL AND OVERSIGHT OF PROTOTYPE BALLAST WATER TREATMENT TECHNOLOGY PROGRAMMES (G10)

(Resolution MEPC.140(54)),
under the authority of the Government of (*full designation of country)*
by *(full designation of the competent person or organization recognized by the Administration)*

Particulars of ship

Name of ship

IMO Number*

Distinctive number or letters

Port of registry

Gross tonnage

Ballast Water Capacity, Volume and Flow Rates

Date on which keel was laid or ship was at a similar stage of construction or, (in the case of a converted ship) date on which conversion was commenced

Date by which the ship is required to comply with regulation D-2

Date on which the prototype ballast water treatment system was installed

Name and address of prototype ballast water treatment technology manufacturer

Trade name of technology

Serial number or other identifying marking

Name of Active Substance and details of Basic Approval

Brief description of the prototype technology

THIS IS TO CERTIFY:

1. That the ship has a prototype ballast water treatment system which is subject to a programme approved in accordance with regulation D-4 by the Government of (*insert Government title*) on *(insert date of approval of programme).*

2. That the prototype ballast water treatment technology installation has been surveyed in accordance with Section 4 of the annex to resolution MEPC.140(54).

3. A copy of the approved programme is on board the ship together with equipment, operations and maintenance manuals for the prototype ballast water treatment technology.

This Statement is valid until *(date)*

(Place of issue of Statement)

(Date of issue)

(Signature of authorized official issuing the Statement)

(Seal or stamp of the authority, as appropriate)

* IMO Ship Identification Number Scheme adopted by the Organization by resolution A.600(15).

RESOLUTION MEPC.149(55)
adopted on 13 October 2006

GUIDELINES FOR BALLAST WATER EXCHANGE DESIGN AND CONSTRUCTION STANDARDS (G11)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Regulation D-1 of the Ballast Water Management Convention stipulates that ships performing ballast water exchange shall do so with an efficiency of at least 95 per cent volumetric exchange of ballast water and that MEPC 51 identified the need for additional guidance on design and construction standards for ships conducting ballast water exchange,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop the Guidelines for uniform application of the Convention as a matter of urgency,

HAVING CONSIDERED, at its fifty-fifth session, the draft Guidelines for ballast water exchange design and construction standards (G11) developed by the Ballast Water Working Group, and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its tenth session,

1. ADOPTS the Guidelines for ballast water exchange design and construction standards (G11);

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX
GUIDELINES FOR BALLAST WATER EXCHANGE DESIGN AND CONSTRUCTION STANDARD (G11)

1 INTRODUCTION

Purpose

1.1 These Guidelines outline recommendations for the design and construction of ships to assist compliance with Regulation D-1 *(Ballast Water Exchange Standard)* of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Convention).

1.2 These Guidelines have been developed to give guidance to shipbuilders, ship designers, owners and operators of ships in designing safe, environmentally acceptable, technically achievable, practicable, and cost effective ballast water exchange as required in Regulation D-1.

1.3 These Guidelines should be applied without compromising the ship's safety and operational efficiency and taking into account the design of ship types, which may have special safety considerations for example container ships and bulk carriers.

2 DEFINITIONS

2.1 For the purposes of these Guidelines, the definitions in the Convention apply and:

.1 "Ballast Water Tank" – means any tank, hold or space used for the carriage of ballast water as defined in Article 1 of the Convention.

.2 "Sequential Method" – means a process by which a ballast tank intended for the carriage of ballast water is first emptied and then re-filled with replacement ballast water to achieve at least a 95 per cent volumetric exchange.

.3 "Flow-through Method" – means a process by which the replacement ballast water is pumped into a ballast tank intended for the carriage of ballast water, allowing water to flow through overflow or other arrangements.

.4 "Dilution Method" – means a process by which replacement ballast water is filled through the top of the ballast tank intended for the carriage of ballast water with simultaneous discharge from the bottom at the same flow rate and maintaining aconstant level in the tank throughout the ballast exchange system.

3 BALLAST WATER EXCHANGE – DESIGN AND CONSTRUCTION CONSIDERATIONS

General considerations

3.1 When designing and constructing a ship that will operate with ballast water exchange the following considerations should be taken into account:

.1 maximizing the efficiency of ballast water exchange;

.2 increasing the range of sea conditions under which ballast water exchange may be conducted safely;

.3 shortening the time to complete ballast water exchange (thereby increasing the types of voyages under which ballast water exchange can be undertaken safely);and

.4 minimizing the accumulation of sediments (refer to Guidelines on design and construction to facilitate sediment control on ships (G12)).

Consideration at the design phase of new ships

3.2 When designing new ships the following aspects related to ballast water management equipment should be considered:

.1 ballast water management and the processes chosen to achieve it, should be considered as a component of the ship's design;

.2 design and installation of the ballast water pumping and piping system should ensure that ease of operation and maintenance is maximized;

.3 ballast tank design should facilitate all aspects of ballast water management;

.4 installation of monitoring and/or recording equipment for all ballast water operations and treatment processes. If any records are automatically recorded by the equipment they should be in a format that can easily be retained and be made readily available to appropriate authorities;

.5 remote data management;

.6 the design of the ballast water exchange system should be such that it facilitates future compliance of the standards set in Regulation D-2 of the Convention, minimizing the need to install new equipment/retrofitting and to carry out dry-docking and/or hot work. It should reduce, as far as possible, the costs of any adaptation for this purpose. Special consideration should be given to the feasibility of combining ballast water exchange methods with ballast water treatment technologies, aiming at meeting, in the future, the standards of Regulation D-2. Adequate spaces for new complementary equipment andpipelines, which may be necessary to meet future standards D-2, should also be considered and planned.

3.3 Where designing new ships ballast water systems designs should take special account of the need for sampling the ballast water by port State control or other authorized organizations. The arrangements should be such that samples as required by the Guidelines for ballast water sampling (G2) can be taken. The sampling arrangements should enhance the quality and ease of sampling of ballast water or sediments, without the need to enter potentially dangerous spaces or partially filled ballast tanks.

3.4 Where ballast water exchange at sea is the chosen method, when designing new ships the following aspects should be considered:

.1 design of ship structures to enable ballast water exchange to be conducted at various sea states/swell conditions and provide to the ship information on the maximum sea state that ballast water exchange can be conducted;

.2 minimize the burden on ships crew (e.g. minimize the number of operational steps, the number of partially loaded tanks and the time taken);

.3 minimize the risk of tank over/under pressurization;

.4 minimize the flow of ballast water on deck;

.5 maintaining bridge visibility standards (SOLAS V/22), propeller immersion and minimum draft forward at any stage of a designed ballast water exchange operation;

.6 the consequences of ballast water exchange at sea, including stability, hull girder strength, shear forces, torsional stresses, resonance, sloshing, slamming and propeller immersion.

3.5 The ballast water exchange methods currently in use are the sequential, flow-through (tank overflow) and dilution methods:

.1 where the sequential method is to be used, particular attention should be given to the ballast tank layout, total ballast capacity, individual tank configuration and hull girder strength. If the plan requires simultaneously empting and refilling closely matched diagonal tanks then consequential torsional stresses should be considered. Still water bending moments, shear forces and stability should remain at or within safe limits;

.2 where the flow through method is to be used adequate provision should be made to avoid the risk of over pressurization of ballast tanks or ballast piping. The installation of additional air pipes, access hatches (as an alternative to deck manholes), internal overflow pipes (to avoid flowing over the deck) and interconnecting ballast trunks between tanks where applicable and possible may be considered. Water on decks and/or direct contact posses a safety and occupational health hazard to personnel. The design should, where possible, be such that it avoids water overflowing directly on to decks to avoid the direct contact by personnel with the ballast water;

.3 where the dilution method is to be used adequate provision should be made for appropriate piping arrangements to facilitate the ballast water pumping into the previously ballasted tanks through the top of the ballast tank and, simultaneously, discharging the ballast water through the bottom of the tank at the same flow rate while maintaining a constant ballast water level in the tank throughout the exchange operation. Adequate provision should also be made to avoid the risk of over pressurization of ballast tanks or ballast piping. The hydrodynamic performance of the ballast tank is crucial to ensure full water exchange and sediment scouring.

4 DESIGN CONSIDERATIONS TO ENHANCE MANAGEMENT, CONTROL AND OPERATIONAL STRATEGIES

Sea chests

4.1 The following should be considered:

.1 sea chest design should be such that sediment accumulation is minimized; and

.2 provision of a high sea chest.

Ballast tanks

4.2 The design of ballast tanks should also take account of the Guidelines on design and construction to facilitate sediment control on ships (G12).

Ship-to-shore ballast transfer arrangements

4.3 If consideration is given to providing ship-to-shore connections to transfer ballast to shore-based ballast water reception facilities, the arrangements should be compatible with a recognized standard such as those in the Oil Companies International Marine Forum (OCIMF) "Recommendations for Oil Tankers Manifolds and Associated Equipment". It is recognized that this standard was originally produced for oil transfer connections, however the general principles in this standard can be applied to connections for ballast transfer in particular the sections related to flanges and connection methods.

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RESOLUTION MEPC.209(63)
adopted on 2 March 2012

2012 GUIDELINES ON DESIGN AND CONSTRUCTION TO FACILITATE SEDIMENT CONTROL ON SHIPS (G12)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING ALSO that regulation B-5.2 of the Ballast Water Management Convention provides that ships constructed in or after 2009 should, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of sediments, facilitate removal of sediments, and provide safe access to allow for sediment removal and sampling taking into account the guidelines developed by the Organization,

NOTING FURTHER resolution MEPC.150(55) by which the Committee adopted the Guidelines on design and construction to facilitate sediment control on ships (G12) and resolved to keep these guidelines under review,

HAVING CONSIDERED, at its sixty-third session, a revised text of the Guidelines on design and construction to facilitate sediment control on ships (G12), developed by the Ballast Water Review Group of the Committee at its sixty-second session,

1. ADOPTS the 2012 Guidelines on design and construction to facilitate sediment control on ships (G12), as set out in the Annex to this resolution;

2. INVITES Member Governments to apply the 2012 Guidelines (G12) as soon as possible or when the Convention becomes applicable to them; and

3. REVOKES the Guidelines (G12) adopted by resolution MEPC.150(55).

* * *

ANNEX
2012 GUIDELINES ON DESIGN AND CONSTRUCTION TO FACILITATE SEDIMENT CONTROL ON SHIPS (G12)

1 PURPOSE

1.1 Regulation B-5.2 of the Convention requires that ships described in regulations B-3.3 to B-3.5 should, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of sediments, facilitate removal of sediments and provide

safe access to allow for sediment removal and sampling, taking into account these Guidelines. Ships described in regulation B-3.1 of the Convention should, to the extent practicable, also comply with regulation B-5.2, taking into account these Guidelines.

1.2 The purpose of these Guidelines is to provide guidance to ship designers, shipbuilders, owners and operators in the development of ship structures and equipment to achieve the objectives of paragraph 1.1 and, thereby, reduce the possibility of introducing harmful aquatic organisms and pathogens.

1.3 There may be a conflict between preventing accumulation of sediments and preventing the discharge of harmful aquatic organisms and pathogens.

2 INTRODUCTION

2.1 Water taken up as ships' ballast can contain solid alluvial matter that, once the water is becalmed in a ship's ballast tank, will settle out onto the bottom of the tank and other internal structures.

2.2 Aquatic organisms can also settle out of the ballast water and can continue to exist within the sediment. These organisms can survive for long periods after the water they were originally in has been discharged. They may thereby be transported from their natural habitat and discharged in another port or area where they may cause injury or damage to the environment, human health, property and resources.

2.3 Regulation B-5.1 of the Convention requires that all ships remove and dispose of sediments from spaces designated to carry ballast water in accordance with the Ballast Water Management Plans. These Guidelines are to assist ship designers, shipbuilders, owners and operators to design ships to minimize the retention of sediment. Guidance on the management of sediment is contained in the Guidelines for ballast water management and development of ballast water management plans (G4).

3 DEFINITIONS

3.1 For the purposes of these Guidelines, the definitions in the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention) apply.

3.2 **Ballast water tank** – For the purposes of these Guidelines, a ballast water tank is any tank, hold or space used for the carriage of ballast water as defined in Article 1 of the Convention.

4 DESIGN FOR REDUCING ACCUMULATION OF SEDIMENT

4.1 Ballast water tanks and their internal structure should be designed to avoid the accumulation of sediment in a ballast tank. The following should, as far as is practicable, be taken into account when designing ballast tanks:

.1 horizontal surfaces to be avoided wherever possible;

.2 where longitudinals are fitted with face bar stiffeners, consideration should be given to fit the face bar stiffeners below the horizontal surfaces to aid drain off from the stiffeners;

.3 arrange for induced flows of water, either by pump forces or gravitational forces, to wash along horizontal or near horizontal surfaces so that it re-suspends already settled sediment;

.4 where horizontal stringers or webs are required, drainage holes to be as large as possible, especially if edge toe-stops are fitted where horizontal stringers are used as walkways, to encourage rapid flow of water off them as the water level in the tank falls;

.5 internal girders, longitudinals, stiffeners, intercostals and floors, where fitted, should incorporate extra drain holes which allow water to flow with minimal restriction during discharge and stripping operations;

.6 where inner members butt against bulkheads, their installation should be such as to prevent the formation of stagnant pools or sediment traps;

.7 scallops should be located at the joints of the inner bottom (tank top) longitudinals or intercostals and floors to allow for good airflow, and thus drying out of an empty tank. This will also allow air to escape to the air pipe during filling so that minimum air is trapped within the tank;

.8 pipeline systems should be designed such that, when deballasting, disturbance of the water in the tank is as powerful as possible, so that the turbulence re-suspends sediment; and

.9 flow patterns in ballast water tanks should be studied (for example by the use of Computational Fluid Dynamics (CFD)) and considered, so that internal structure can be designed to provide effective flushing. The amount of internal structure in double bottom tanks will reduce the scope for improving flow patterns. The hydrodynamic performance of the ballast tank is crucial to ensure sediment scouring.

4.2 Any designs depending upon water flow to re-suspend sediment should, as far as possible, be independent of human intervention, in order that the workload of ships' crews is minimal when operating the system.

4.3 The benefits of design concepts for reducing sediment accumulation are that there is likely to be good sediment removal while deballasting, with minimum retention of sediment in the tanks, and therefore a reduction or no need for removal by other means.

4.4 The design of all ships should provide safe access to allow for sediment removal and sampling.

4.5 The design of ballast water systems should, as far as practicable, facilitate installation of high sea suction points on each side of the ship.

4.6 When practical, equipment to remove suspended matter at the point of uptake should be installed.

RESOLUTION MEPC.161(56)
adopted on 13 July 2007

GUIDELINES FOR ADDITIONAL MEASURES REGARDING BALLAST WATER MANAGEMENT INCLUDING EMERGENCY SITUATIONS (G13)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (Ballast Water Management Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that Section C of the Annex to the International Convention for the Control and Management of Ships' Ballast Water and Sediments provides that, if a Party, individually or jointly with other Parties, determines that measures in addition to those in Section B of the Convention are necessary to prevent, reduce, or eliminate the transfer of harmful aquatic organisms and pathogens through ships' ballast water and sediments, such Party or Parties may, consistent with international law, require ships to meet a specified standard or requirement taking into account the Guidelines developed by the Organization,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop these Guidelines as a matter of urgency,

HAVING CONSIDERED, at its fifty-sixth session, the draft Guidelines for additional measures regarding ballast water management including emergency situations (G13) developed by the Ballast Water Working Group,

1. ADOPTS the Guidelines for additional measures regarding ballast water management including emergency situations (G13) as set out in the annex to this resolution;

2. INVITES Governments to apply these Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep these Guidelines under review.

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ANNEX

GUIDELINES FOR ADDITIONAL MEASURES REGARDING BALLAST WATER MANAGEMENT INCLUDING EMERGENCY SITUATIONS (G13)

1 INTRODUCTION

1.1 The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, hereafter referred to as the "Convention", regulates the transfer of harmful aquatic organisms and pathogens from ships' ballast water and sediments.

1.2 These Guidelines have been developed pursuant to regulation C-1 of the Convention. These Guidelines provide guidance under regulation C-1 for a Party or Parties to use when determining if measures in addition to those in Section B of the Convention are necessary in order to prevent, reduce or eliminate the transfer of harmful aquatic organisms and pathogens through ships' ballast water and sediments.

1.3 The Guidelines should be kept under review in order to make use of experiences gained in their application.

2 ASSESSMENT WHEN A STATE INTENDS TO INTRODUCE ADDITIONAL MEASURES

2.1 General

2.1.1 The Convention, in regulation C-1 Additional Measures, provides that a Party individually or jointly with other Parties, may introduce measures in addition to those in Section B. A Party or Parties may require ships, in accordance with international law, to meet orexceed a specified standard or requirement.

2.1.2 A Party intending to introduce additional measures should take these Guidelines into account, and endeavour to make available all appropriate services for ships to facilitate their compliance with any additional measures.

2.2 The assessment

2.2.1 Before a Party, individually or jointly with other Parties, intends to introduce additional measures in accordance with regulation C-1 of the Convention, it should assess the need for and nature of the measures, which should include:

.1 identification of the concern, i.e., the potential harm from the introduction of harmful aquatic organisms and pathogens in the area to be covered by the additional measures;

.2 description of the cause(s) of the identified concern;

.3 identification of potential additional measures to be introduced; and

.4 identification of potential effects and consequences, beneficial and detrimental, resulting from introduction of the proposed additional measure(s).

2.2.2 A Party should assess the character of the concern. Such an assessment may include a consideration of such things as:

.1 What are the probabilities or consequences of future introductions of harmful aquatic organisms and pathogens on the environment, human health, property, or resources?

.2 If harmful aquatic organisms or pathogens have already been introduced, what effects are they already having on the environment, human health, property or resources, and how might this be affected by future introductions?

.3 Whether ballast water from ships is a vector for the introduction of harmful aquatic organisms and pathogens?

Identification of the additional measures to be introduced

2.2.3 The additional measure(s) to be introduced shall be in accordance with Article 7.2 and regulation C-1.3 of the Convention, and should be clearly identified in respect of:

.1 the area(s) where the additional measure(s) is/are applicable defined by precise co-ordinates;

.2 the operational and/or technical requirement(s) which applies to ships in the area(s), and the requirement(s) to provide documentation for compliance if needed;

.3 the arrangements which may be provided to facilitate ships' compliance with the additional measure(s);

.4 the effective date and duration of the measure(s); and

.5 any other requirements and services in relation to the additional measure(s).

Effects and consequences of introduction of the proposed measure(s)

2.2.4 The economic consequences resulting from the introduction of the additional measure(s) should be taken into account. In this respect the following aspects may be relevant:

.1 the economic benefits and possible costs, including costs to the industry, associated with the additional measure(s); and

.2 any other effects and consequences.

2.3 Procedures to follow when establishing additional measures

2.3.1 A Party or Parties intending to introduce additional measures in accordance with regulation C-1 of the Convention should consult adjacent States and other States that may be affected before the additional measures are decided upon so that such consultations can, where appropriate, meaningfully inform decision making. The Assessment as outlined in section 2.2 of these Guidelines should be presented to affected States, and States should be invited to comment on the draft assessment, if appropriate.

.1 In regulation C-1 of the Convention two procedures for introducing additional measures are possible – one procedure which requires IMO approval, and another procedure which only requires IMO notification.

.2 The Party or Parties should ensure that any additional measure(s) shall not compromise the safety and security of the ship and in any circumstances not conflict with any other conventions or customary international law with which the ship must comply.

.3 The legal determination upon which the additional measure(s) is submitted should be identified.

.4 In introducing additional measures, the Party or Parties should, *inter alia*, provide the following information to the Organization, in particular the Marine Environment Protection Committee (hereafter known as the "MEPC"):

.1 the Assessment as outlined in section 2.2;

.2 the identification of the legal determination upon which each additional measure(s) is submitted; and

.3 the following additional details:

.1 if the additional measure(s) is already provided under an existing IMO instrument; or

.2 if the additional measure(s) does not yet exist but could become available through amendment of any IMO instrument or adoption of a new IMO instrument; or

.3 if the additional measure(s) is proposed for adoption in the territorial sea[1] or pursuant to the United Nations Convention on the Law of the Sea where existing measures or a generally applicable measure would not adequately address the concern identified in section 2.2.

.5 Where a Party or Parties may seek to introduce additional measures through the notifying procedure, the IMO should be notified at least 6 months prior to the projected date of im-

plementation, except in emergency circumstances in accordance with regulation C-1.3.2 of the Convention.

.6 In the case where a Party or Parties intend to introduce additional measure(s) that requires approval by the Organization under international law as reflected in UNCLOS (see regulation C-1.3.3 of the Convention), the Party or Parties should, in accordance with the rules adopted by the MEPC for submission of papers, submit the application to introduce additional measure(s) to the MEPC for its approval.

.7 In considering additional measures that require the approval of the Organization, the MEPC should be expected to consider an application submitted to it by a proposing Party or Parties on a case-by-case basis. In assessing each proposal, the MEPC should be expected in particular to consider:

.1 whether such additional measures are in accordance with Article 7.2 and regulation C-1.3 of the Convention;

.2 whether the proposed additional measures are appropriate to prevent, reduce, or eliminate the identified potential harm from the introduction of harmful aquatic organisms and pathogens in the area to be covered by the additional measures;

.3 whether such measures might result in an increased potential for significant adverse effects by international shipping activities on the environment outside the area to be covered by the additional measures; and

.4 whether such measures might, *inter alia*, result in any impact on the safety and commercial aspect of international shipping activities.

.8 In the case where an application is submitted for approval, if the MEPC approves the application, the additional measure(s) may be implemented. If the application is not approved, the additional measure(s) cannot be implemented. The proposing Party or Parties may submit a revised application to the Marine Environment Protection Committee for approval subsequently.

2.4 Communication of information

2.4.1 A Party or Parties intending to introduce additional measures should inform adjacent States and other States that may be affected, the shipping industry in general and ships entering the areas concerned as soon as possible, and in the case of those measures requiring approval of the Organization, as soon as the proposal has been so approved. The information should at least contain:

.1 the precise co-ordinates where and applicable date when additional measure(s) is/are applicable;

.2 the need and reasoning for the application of the additional measure(s), including, whenever possible, benefits;

.3 a description of the additional measure(s); and

.4 any arrangements that may be provided to facilitate ships' compliance with the additional measures.

2.4.2 Communications in accordance with regulation C-1 of the Convention shall be submitted to the

[1] This provision does not derogate from the rights and duties of coastal States in the territorial sea as provided for in the United Nations Convention on the Law of the Sea.

Marine Environment Protection Committee. Except in emergency situations, the intention to establish such additional measures is required by regulation C-1.3 to be communicated to the Organization at least six months prior to the projected date of implementation. In emergency situations, additional measures should be communicated to the Organization as soon as possible.

2.4.3 In both cases (approval/non-approval), in due time before the introduction of the additional measure(s) a Party or Parties intending to introduce additional measures should inform affected States, the shipping industry in general and ships entering the areas concerned, the following should be communicated:

.1 the precise co-ordinates where additional measure(s) is/are applicable;

.2 the operational and/or technical requirement(s) which applies or apply to ships in the area(s), and the requirement(s) to provide documentation for compliance if needed;

.3 the arrangements which may be provided to facilitate ships' compliance with the additional measure(s);

.4 the effective date and duration of the measure(s); and

.5 any other requirements and services in relation to the additional measure(s).

2.4.4 The Organization shall issue circulars or post relevant information on the website in accordance with the provisions of the Convention.

3 EMERGENCY OR EPIDEMIC SITUATION

3.1 A Party or Parties may adopt an additional measure(s) to address an emergency or epidemic situation.

3.2 If such a measure is adopted, a Party or Parties should, as soon as possible, notify adjacent and other States that may be affected, the shipping industry in general, and ships operating in the areas of concern. Such information should contain:

.1 the precise co-ordinates of the area;

.2 the need for such additional measure(s);

.3 a description of the additional measure(s);

.4 any arrangements that may be provided to facilitate ships' compliance with the additional measure(s); and

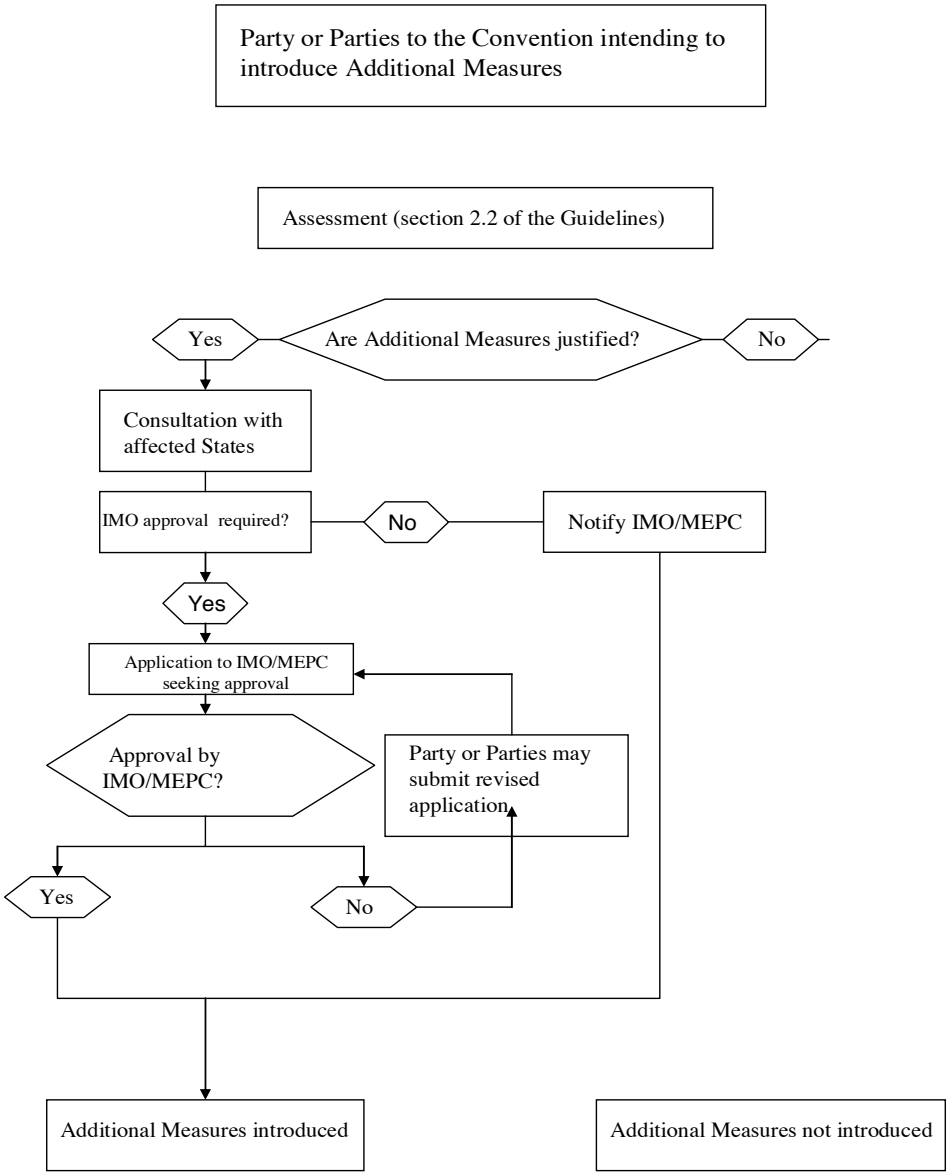
.5 the effective date when the measure(s) applies and when the measure(s) is no longer in effect.

3.3 In an emergency or epidemic situation, the additional measure(s) adopted should be communicated to the Organization as soon as possible. The Organization shall post relevant information on its website and retain such information for dissemination to the Committee.

**

APPENDIX

FLOW CHART – PROCEDURE FOR INTRODUCING ADDITIONAL MEASURES



RESOLUTION MEPC.151(55)
adopted on 13 October 2006

GUIDELINES ON DESIGNATION OF AREAS FOR BALLAST WATER EXCHANGE (G14)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

NOTING that Regulation A-2 of the Ballast Water Management Convention requires that discharge of ballast water shall only be conducted through Ballast Water Management in accordance with the provisions of the Annex to the Convention,

NOTING FURTHER that regulation B-4.2 of the Convention stipulates that in sea areas where the distance from the nearest land or the depth does not meet the parameters described in Regulation B-4.1, the port State may designate areas, in consultation with adjacent or other States, as appropriate, where a ship may conduct ballast water exchange and MEPC 52 identified the need for additional guidance on the designation of areas for ballast water exchange,

NOTING ALSO that resolution 1 adopted by the International Conference on Ballast Water Management for Ships invited the Organization to develop the Guidelines for uniform application of the Convention as a matter of urgency,

HAVING CONSIDERED, at its fifty-fifth session, the draft Guidelines on designation of areas for ballast water exchange (G14) developed by the Ballast Water Working Group, and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its tenth session,

1. ADOPTS the Guidelines on designation of areas for ballast water exchange (G14) as set out in the Annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, or when the Convention becomes applicable to them; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES ON DESIGNATION OF AREAS FOR BALLAST WATER EXCHANGE (G14)

1 PURPOSE

1.1 The purpose of these Guidelines is to provide guidance to port States for the identification, assessment and designation of sea areas where ships may conduct ballast water exchange in accordance with Regulation B-4.2 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Convention).

2 INTRODUCTION

2.1 Regulation B-4.2 of the Convention allows port States to designate areas, in consultation with adjacent or other States, as appropriate, where ships may conduct ballast water exchange.

2.2 These Guidelines provide generic guidance to promote uniform application of Regulation B-4.2 in designating are as for ballast water exchange to minimize the risk of introduction of harmful aquatic organisms and pathogens. Party or Parties designating an area according to Regulation B-4.2 should endeavour not to impair or damage their environment,human health, property or resources or those of other States (under Article 2.6 of the Convention).

3 APPLICATION

3.1 These Guidelines are intended for port States considering and intending to designate areas for ballast water exchange in accordance with Regulation B-4.2. Regulation B-4.2 states that "in sea areas where the distance from the nearest land or the depth does not meet the parameters described in paragraph 1.1 or 1.2, the port State may designate areas, in consultation with adjacent or other States, as appropriate, where a ship may conduct Ballast Water exchange".

4 DEFINITIONS

4.1 For the purposes of these Guidelines, the definitions in the Convention apply.

5 PROCESS FOR THE DESIGNATION OF SEA AREAS FOR BALLAST WATER EXCHANGE

5.1 There are three integral steps to designating an area as a ballast water exchange area: identification, assessment and designation. The Guidelines provide criteria to address and consider for each of these steps (see sections 7, 8 and 9), however these criteria are not intended to be exhaustive.

5.2 A port State considering designating ballast water exchange areas shall do this in accordance with its rights and obligations under international law.

6 CONSULTATION AND REGIONAL CO-OPERATION

6.1 The port State should consult with adjacent or other States, as appropriate, when identifying, assessing and designating potential ballast water exchange areas. It must be recognized that some States may not be a Party to the Convention, however this should not negate the consultation process. The port State initiating the consultation process should exchange information and should take into account all views and comments of the adjacent and other States as far as practicable. States should endeavour to resolve any identified concerns.

6.2 If multiple Parties wish to jointly designate ballast water exchange areas, they could do so under Article 13.3 of the Convention through a regional agreement.

7 IDENTIFICATION OF POTENTIAL SEA AREAS FOR BALLAST WATER EXCHANGE

7.1 Depending upon the nature of the seas surrounding the port State, it may be considered appropriate for single or multiple ballast water exchange areas to be identified.

7.2 The following considerations should be taken into account when identifying potential sea area(s) forundertaking ballast water exchange:

Legal aspects

7.2.1 Any national or international legal requirements or obligations should be considered in identifying potential sea areas for designation under Regulation B-4.2.

7.2.2 Sea areas beyond the jurisdiction of a port State may provide the most practical and appropriate area for ballast water exchange. A Party should not designate ballast water exchange areas in waters under the jurisdiction of another State, without its agreement and consultation with adjacent and other States. Consultation should be initiated as soon as possible in the process to facilitate exchange of information and agreement for the designation of the ballast water exchange area (see section 6).

Important resources and protected areas

7.2.3 In the designation of ballast water exchange area, Parties should consider and avoid, to the extent practicable, potential adverse impact in aquatic areas protected under national or international law, as well as other important aquatic resources including those of economic and ecological importance.

Navigational constraints

7.2.4 Any designation of ballast water exchange areas should take into account navigation impacts, including the desirability of minimizing delays, as appropriate, taking into consideration the following:

.1 the area should be on existing routes if possible,

.2 if the area cannot be on existing routes, it should be as close as possible to them.

7.2.5 Constraints to safe navigation must be considered when selecting the location and size of the ballast water exchange area. Such considerations should include, but are not limited to:

.1 increased shipping traffic congestion;

.2 proximity to other vessel traffic (small craft, offshore platforms, etc.);

.3 adequate aids to navigation;

.4 security of the area; and

.5 shipping lanes/routeing systems.

8 ASSESSMENT OF IDENTIFIED SEA AREAS

8.1 Risk assessment is a logical process for objectively assigning the likelihood and consequences of specific events. Risk assessments can be qualitative or quantitative, and can be a valuable decision aid if completed in a systematic and rigorous manner.

8.1.1 The following key principles define the nature and performance of risk assessment:

.1 **Effectiveness** – That risk assessments accurately measure the risks to the extent necessary to achieve an appropriate level of protection.

.2 **Transparency** – That the reasoning and evidence supporting the actions recommended by risk assessments, and areas of uncertainty (and their possible consequencesto those recommendations), are clearly documented and made available to decision-makers.

.3 **Consistency** – That risk assessments achieve a uniform high level of performance, using a common process and methodology.

.4 **Comprehensiveness** – That the full range of values, including economic,environmental, social and cultural, are considered when assessing risks and making recommendations.

.5 **Risk Management** – Low risk scenarios may exist, but zero risk is not obtainable, and as such risk should be managed by determining the acceptable level of risk in each instance.

.6 **Precautionary** – That risk assessments incorporate a level of precaution when making assumptions, and making recommendations, to account for uncertainty, unreliability, and inadequacy of information. The absence of, or uncertainty in, any information should therefore be considered an indicator of potential risk.

.7 **Science based** – That risk assessments are based on the best available information that has been collected and analysed using scientific methods.

.8 **Continuous improvement** – Any risk model should be periodically reviewed and updated to account for improved understanding.

8.2 The identified ballast water exchange area(s) should be assessed in order to ensure that its designation will minimize any threat of harm to the environment, human health, property or resources taking into account but not limited to the following criteria:

8.2.1 **Oceanographic** (e.g., currents, depths)

- Currents, upwellings or eddies should be identified and considered in the evaluation process. Sea areas where currents disperse discharged ballast water away from land should be selected where possible.
- Areas where tidal flushing is poor or where a tidal stream is known to be turbid, should be avoided where possible.
- The maximum water depth available should be selected where possible.

8.2.2 **Physico-chemical** (e.g., salinity, nutrients, dissolved oxygen, chlorophyll 'a')

- High nutrient areas should be avoided where possible.

8.2.3 **Biological** (e.g., presence of Harmful Aquatic Organisms and Pathogens, including cysts; organisms density)

- Areas known to contain outbreaks, infestations, or populations of Harmful Aquatic Organisms and Pathogens (e.g. harmful algal blooms) which are likely to be taken up in Ballast Water, should be identified and avoided where possible.

8.2.4 **Environmental** (e.g., pollution from human activities)

- Sea area(s) that may be impacted by pollution from human activities (e.g., areas nearby sewage outfalls) where there may be increased nutrients or where there may be human health issues, should be avoided where possible.
- Sensitive aquatic areas should be avoided to the extent practicable.

8.2.5 **Important resources** (e.g., fisheries areas, aquaculture farms)

- Location of important resources, such as key fisheries areas and aquaculture farms should be avoided.

8.2.6 **Ballast water operations** (e.g., quantities, source, frequency)

- A foreseen estimation of the quantities, sources and frequencies of ballast water discharges from vessels that will use the designated sea area should be considered in the assessment of such area.

8.3 An assessment of the most appropriate size of the designated ballast water exchange area needs to take into account the above considerations.

9 DESIGNATION OF SEA AREAS FOR BALLAST WATER EXCHANGE

9.1 The location and size that provide the least risk to the aquatic environment, human health, property or resources should be selected for designation. The spatial limits of the ballast water exchange area/s should be clearly defined and shall be in accordance with international law. It may also be possible for the designation of a ballast water exchange area to apply over specified timeframes, and these should be clearly defined.

9.2 A baseline evaluation should be conducted to aid future monitoring and review. The process of identification and assessment may provide sufficient information for the baseline.

10 COMMUNICATION

10.1 A Party or Parties intending to designate areas for ballast water exchange under Regulation B-4.2 should communicate this intention to the Organization prior to the implementation of the designated ballast water exchange area. Such communication should include:

.1 The precise geographical co-ordinates, depth limit and/or distance from nearest land that defines the designated ballast water exchange area.

.2 Other information that may be relevant to facilitate ships' identification of the designated ballast water exchange area, for example navigation aids.

.3 Details of the characteristics of the designated ballast water exchange area that may be relevant to assist ships plan their voyage, including: use of area by other traffic, current and tidal flow, wind and swell conditions, seasonal events (cyclones, typhoons, ice, etc.).

10.2 The Organization shall circulate information regarding designated ballast water exchange areas to the Members of the Organization.

10.3 Port States should provide adequate advice to ships on the location and terms of use of the designated ballast water exchange area. Such advice may include exchanging as many tanks as possible under regulation B-4.1, as far as practicable taking into account regulation B-4.3, before utilizing the designated ballast water exchange area.

11 MONITORING AND REVIEW

11.1 The use of the designated ballast water exchange area and any impacts on the aquatic environment, human health, property or resources of the port State or those of other States should be monitored and reviewed on a regular basis.

11.2 One reason for monitoring may be to document the occurrence of harmful aquatic organisms in such areas which may be introduced by ballast water exchange. In case harmful aquatic organisms are found to be introduced, the designated ballast water exchange area may be closed to avoid promoting the spread of such newly occurring species to other regions.

2.3 Other IMO resolutions and guidelines related to the implementation of the BWM Convention

RESOLUTION MEPC.252(67)
adopted on 17 October 2014

GUIDELINES FOR PORT STATE CONTROL UNDER THE BWM CONVENTION

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four conference resolutions,

RECALLING FURTHER that article 9 of the Ballast Water Management Convention prescribes that ships to which the Convention applies may, in any port or offshore terminal of another Party, be subject to inspection by officers duly authorized by that Party for the purpose of determining whether the ship is in compliance with the Convention,

NOTING that article 3.3 of the Ballast Water Management Convention prescribes that Parties to the Convention shall apply its requirements as may be necessary to ensure that no more favourable treatment is given to ships of non-Parties to the Convention,

HAVING CONSIDERED, at its sixty-seventh session, *Guidelines for port State control under the BWM Convention*, developed by the Sub-Committee on Implementation of IMO Instruments, at its first session,

1. ADOPTS the *Guidelines for port State control under the BWM Convention,* as set out in the annex to this resolution;

2. INVITES Governments to apply the Guidelines when exercising port State control inspections;

3. AGREES to keep the Guidelines under review, following the trial period associated with the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines* (G2) (BWM.2/Circ.42) and in the light of experience gained with their application.

* * *

ANNEX

GUIDELINES FOR PORT STATE CONTROL UNDER THE BWM CONVENTION

CHAPTER 1

GENERAL

1.1 Purpose

1.1.1 These Guidelines are intended to provide basic guidance for the conduct of a port State control (PSC) inspection to verify compliance with the requirements of the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 (BWM Convention). They are not intended to limit the rights the port State has in verifying compliance with the BWM Convention.

1.1.2 The Marine Environment Protection Committee, at its sixty-fifth session (May 2013), approved the Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2) (BWM.2/Circ.42) and agreed in principle with the recommendations related to the trial period for reviewing, improving and standardizing the Guidance, as set out in annex 6 to document BLG 17/18.

1.2 Definitions and abbreviations

1.2.1 For the purpose of these guidelines, the definitions in the BWM Convention and in BWM.2/Circ.42 apply.

1.2.2 For the purpose of these guidelines, the following abbreviations apply:

IBWMC: International Ballast Water Management Certificate;

BWMP: Ballast Water Management Plan;

BWRB: Ballast Water Record Book;

BWMS: Ballast Water Management System;

FSUs: Floating Storage Units; and

FPSOs: Floating Production, Storage and Offloading unit.

1.3 Application

1.3.1 These guidelines apply to ships as stipulated in article 3 of the BWM Convention.

1.3.2 The regulations of the BWM Convention contain the following compliance provisions:

.1 the discharge of ballast water shall only be conducted in accordance with the regulations of the BWM Convention (regulation A-2);

.2 an IBWMC is required for all ships of 400 GT or above, excluding floating platforms, FSUs and FPSOs, as identified in regulation E-2;

.3 a ship is required to have on board and implement a BWMP approved by the Administration;

.4 a ship is required to have on board and maintain a BWRB which shall at least contain the information specified in appendix II of the BWM Convention, for a minimum period of two years after the last entry has been made (regulation B-2);

.5 a ship is required to meet either the ballast water exchange standard (regulation D-1) or ballast water performance standard (regulation D-2) in accordance with regulation B-3. The PSCO, however, should only enforce this in accordance with the schedule in resolution A.1088(28);

.6 ballast water exchange is conducted at least 200 nm from the nearest land and in water at least 200 m in depth, or in cases where the ship is unable, at least 50 nm from the nearest land and in water at least 200 m in depth, or in a designated ballast water exchange area and is required to be conducted in accordance with regulation B-4;

.7 sediment is removed and disposed from spaces designated to carry ballast water in accordance with the provisions of the ship's BWMP;

.8 officers and crew shall be familiar with their duties in the implementation of ballast water management particular to the ship and ship's BWMP (regulation B-6);

.9 any exemptions from the BWM Convention shall be recorded in the BWRB (regulation A-4.4) as well as records of any accidental and exceptional discharges (regulation B-2.3) and instances where ballast water was not exchanged in accordance with the BWM Convention (regulation B-4.5);

.10 a ship is required to report accidents or defects that affect its ability to manage ballast water to the flag State and the port State (regulation E-1.7);

.11 the condition of a ship, and its equipment, systems and processes shall be maintained to conform with the BWM Convention (regulation E-1.9); and

.12 after any survey of a ship under regulation E-1.1 has been completed, no change shall be made in the structure, equipment, fittings, arrangements or material associated with the BWMP and covered by the survey without the sanction of the Administration, except the direct replacement of such equipment or fittings (regulation E-1.10).

1.3.3 The regulations of the BWM Convention contain the following exceptions to the specific compliance provisions detailed below:

.1 exception to ballast water management requirements in the case of uptake or discharge of ballast water and sediments necessary for the purpose of ensuring the safety of a ship in emergency situations or saving life at sea (regulation A-3.1);

.2 exception to ballast water management requirements under certain conditions in the case of the accidental discharge or ingress of ballast water and sediments resulting from damage to a ship or its equipment (regulation A-3.2);

.3 exception to ballast water management requirements in the case of the uptake and discharge of ballast water and sediments when being used for the purpose of avoiding or minimizing pollution incidents from the ship (regulation A-3.3);

.4 exception to the ballast water management requirements in the case of the uptake and subsequent discharge on the high seas of the same ballast water and sediments (regulation A-3.4);

.5 exception to the ballast water management requirements in the case of the discharge of ballast water and sediments from a ship at the same location where the whole of the ballast and those sediments originated and provided that no mixing with unmanaged ballast water and sediments from other areas has occurred (regulation A-3.5);

. .6 exception to the ballast water management requirements in the case of the discharge of ballast water to a reception facility designed taking into account the Guidelines for ballast water reception facilities (G5) (regulation B-3.6); and

.7 exception to the ballast water exchange requirements in the case where the master reasonably decides that such exchange would threaten the safety or stability of the ship, its crew, or its passengers because of adverse weather, ship design or stress, equipment failure, or any other extraordinary condition (regulation B-4.4).

1.3.4 With respect to ships of non-parties to the BWM Convention, port State control officers (PSCO) of Parties should apply the same requirements to ensure that no more favourable treatment is given to such ships.

1.3.5 The BWM Convention provides for a transition between two standards of ballast water management: from the ballast water exchange standard (regulation D-1) to the ballast water performance standard (regulation D-2). Resolution A.1088(28) on *Application of the International Convention for the Control and Management of Ships' Ballast Water and Sediments*, 2004 should be used by the PSCO instead of the schedules of regulation B-3 for the purpose of enforcing compliance with the ballast water performance standard.

CHAPTER 2

INSPECTIONS OF SHIPS REQUIRED TO CARRY THE BALLAST WATER MANAGEMENT (BWM) CERTIFICATE

2.1 Four-stage inspection

The PSC procedure can be described as a four-stage inspection:

.1 the first stage, the "initial inspection", should focus on documentation and ensuring that an officer has been nominated for ballast water management on board the ship and to be responsible for the BWMS, and that the officer has been trained and knows how to operate it;

.2 the second stage – the "more detailed inspection" where the operation of the BWMS is checked and the PSCO clarifies whether the BWMS has been operated adequately according to the BWMP and the self-monitored operational indicators verified during type approval procedures. Undertaking a detailed inspection is dependent on the conditions of article 9.2 of the BWM Convention;

.3 the third stage – sampling is envisaged to occur during this stage of PSC which relies on indicative analysis, to identify whether the ship is meeting the ballast water management performance standard described in regulation D-2, or whether detailed analysis is necessary to ascertain compliance; and

.4 the fourth stage, if necessary, incorporates detailed analysis to verify compliance with the D-2 standard.

2.2 Initial inspection

2.2.1 An initial inspection will, as a minimum and to the extent applicable, examine the following:

.1 check that a valid IBWMC is on board, based on article 9.1(a);

.2 check the BWMP is on board and approved by the flag State, based on regulation B-1;

.3 check the BWRB is on board and meets the requirements of the BMW Convention, based on regulation B-2;

.4 check that the details of any ballast water operations carried out are recorded in the BWRB together with any exemptions granted, based on regulation B-2 and appendix II of the BWM Convention, as well as notations of any accidental and exceptional discharges (regulation B-2.3) and instances where ballast water was not exchanged in accordance with the BWM Convention (regulation B-4.5). The BWRB should be in an approved format (which may be an electronic record system, which may be integrated into another record book or system) and should be kept on board the ship for a minimum of two years after the last entry. The officer in charge of the operation should sign each entry in the BWRB and the master should sign each completed page;

.5 in conducting the initial inspection, PSCO should conduct a visual check of the overall condition of the ship and the equipment and arrangements detailed in the IBWMC and the BWMP, including the BWMS if the use of one is required;

.6 in the case of a ship subject to the ballast water exchange standard, check that the BWRB indicates that the required exchange was undertaken, or alternatively, the ship has taken steps to meet the ballast water performance standard described in regulation D-2;

.7 check that the ship has taken steps to meet the ballast water performance standard described in regulation D-2 once required to do so by resolution A.1088(28);

.8 check that an officer has been designated to be responsible for the BWMP;

.9 check that designated officers and crew are familiar with essential BWM procedures, including the operation of BWMS; and

.10 in the case of a ship claiming an exception under regulation A-3.1 (safety of the ship or saving life), regulation A-3.2 (accidental discharge or ingress resulting from damage), regulation A-3.3 (avoiding or minimizing pollution) or regulation B-4.4 (unsafe conditions for exchange), the master should provide proof of the need for the relevant exception.

2.2.2 The performance of a ballast water management system (BWMS) is key to protecting the environment, human health, property and resources of the port State. While this performance may be verified directly by sampling the ship's ballast water (as per article 9.1(c) and Guidelines for ballast water sampling (G2)), both the port State and the ship may benefit from a document check to more readily establish the validity of the BWMS during the initial inspection. To this end, the PSCO may ask to check the Type Approval Certificate for the BWMS, to determine whether the BWMS is used in accordance with any limiting conditions on the Type Approval Certificate. While carriage and presentation of the Type Approval Certificate is not mandatory, the PSCO may also consult the BWMP to obtain ship-specific information on the BWMS and its use, and may refer to type-approval information shared with the Organization pursuant to the Information reporting on type approved ballast water management systems (resolution MEPC.228(65)).

2.2.3 If the IBWMC is valid, the approved BWMP is on board, entries in the BWRB are appropriate and the PSCO's general impressions and visual observations on board confirm a good standard of maintenance with regard to the BWM Convention, the PSCO should generally confine the initial inspection to reported deficiencies.

2.2.4 Clear grounds

2.2.4.1 When a PSCO inspects a foreign ship which is required to hold an IBWMC, and which is in a port or an offshore terminal under the jurisdiction of the port State, any such inspection should be limited to verifying that there is on board a valid certificate and other relevant documentation and the PSCO

forming an impression of the overall condition of the ship, its equipment and its crew, unless there are "clear grounds" for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate.

2.2.4.2 "Clear grounds" to conduct a more detailed inspection include:

.1 BWMC is missing, not valid, or has expired;

.2 absence of a BWMP approved by the flag State;

.3 absence of a BWRB or a BWRB that does not meet the requirements of the BWM Convention;

.4 entries in the BWRB do not reflect the actual ballast water situation on board;

.5 condition of the ship or its equipment does not correspond substantially with the particulars of the IBWMC and the BWMP or has not been maintained;

.6 no officer has been designated in accordance with regulation B-1.5;

.7 information or evidence that the master or designated crew is not familiar with their duties and essential shipboard operations relating to the implementation of the ballast water management or that such operations have not been carried out;

.8 information from third parties such as a report or complaint concerning violation of the BWM Convention;

.9 if the BWMP requires the use of a BWMS evidence, or observation that the BWMS has not been used in accordance with its operational instructions;

.10 evidence or observation of unreported accidents or defects that affect the ability of the ship to manage ballast water (regulation E-1.7);

.11 evidence or observation that ballast water has been discharged other than in accordance with the regulations of the BWM Convention (regulation A-2); and

.12 the master has not provided the proof referenced in paragraph 2.2.1.10.

2.2.4.3 If the ship does not carry valid certificates, or if the PSCO, from general impressions or observations on board, has clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificates or the BWM Convention, or that the master or designated crew is not familiar with, or have not implemented essential shipboard procedures, a more detailed inspection should be carried out. Where a more detailed inspection is to be carried out, the port State will take such steps to ensure the ship will not discharge ballast water until it can do so in accordance with article 9.3 of the BWM Convention (see notification requirements in paragraph 3.3 below).

2.3 More detailed inspection

2.3.1 When carrying out a more detailed inspection, the PSCO may utilize, but not be limited to, the following questions to ascertain the extent of compliance with the BWM Convention:

.1 Is the ballast water management on board the ship in accordance with the operations outlined in the ship's BWMP? In particular:

.1 Is the crew following specific operational or safety restrictions associated with safe tank entry, if needed?

.2 Is the crew managing ballast water sediments in accordance with the BWMP?

.3 Are designated officers following their duties as set out in the BWMP?

.4 Are the record-keeping requirements in accordance with the BWMP?

.2 Since the time of the survey of the ship under regulation E-1.1, has an unsanctioned change been made to the structure, equipment, fittings, arrangements or material associated with the BWMP, except the direct replacement of such equipment or fittings (regulation E-1.10)?

.3 If the BWMP requires the use of a BWMS:

.1 Is the BWMS and associated equipment in good working order, (this could include filters, pumps, and back flushing equipment)?

.2 Is the crew following safety procedures associated with operation of the BWMS?

.3 Is the treatment process fully operational (this could include, reference to the self-monitoring system of a BWMS)?

.4 Does the BWRB align with the onboard control equipment, including the self-monitoring device of the BWMS?

.5 Is the BWMS being operated according to the operational instructions?

.6 Can the designated officer demonstrate the necessary knowledge of the BWMS and how it operates?

.7 Has the BWMS been bypassed?

.8 Where required, are any needed Active Substances present in adequate supply on board the ships, and where present, are they being introduced into the BWMS?

2.3.2 The PSCO may examine any element of the ballast water system in order to check that it is working properly.

2.3.3 More detailed inspection may result in sampling.

2.4 Sampling

2.4.1 PSCO should carry out an indicative analysis first. However, the time required to conduct the indicative analysis should not unduly delay the operations, movement or departure of the ship. If the result of indicative analysis for the D-2 standard exceeds the D-2 standard by a threshold specific to the validated indicative analysis method being used as set out in the Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2) (BWM.2/Circ.42)[1], a detailed analysis can be carried out.

2.4.2 The quantity of the sampling water to be taken and location in the ship chosen should be in accordance with the Guidelines for ballast water sampling (G2) and associated guidance developed by the Organization. Every effort should be made to avoid any undue delays to the ship.

2.4.3 The PSCO should not delay the operation, movement or departure of the ship while waiting for the

[1] The validation on a specific method is to be carried out through the process of review and revision of the *Guidance on sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42).

results of detailed analysis.

2.5 Violations and control of ships

Stopping the discharge due to sampling as a control action

2.5.1 If the sampling described above leads to a result, or supports information received from another port or offshore terminal, indicating that the ship poses a threat to the environment, human health, property or resources, the Party in whose waters the ship is operating should prohibit such ship from discharging ballast water until the threat is removed (see notification requirements in paragraph 3.3 below).

Detainable deficiencies

2.5.2 If a ship has violated the BWM Convention, the PSCO may take steps to warn, detain or exclude the ship or grant such a ship permission to leave to discharge ballast water elsewhere or seek repairs. The PSCO should use professional judgment to determine whether to detain the ship until any noted deficiencies are corrected, or to permit a ship to sail with deficiencies that do not pose an unreasonable threat of harm to the marine environment, human health, property or resources (see notification requirements in paragraphs 3.3 to 3.6 below).

2.5.3 In order to assist the PSCO in the use of these guidelines, there follows a non-exhaustive list of deficiencies which are considered to be of such a serious nature that they may warrant the detention of a ship:

.1 absence of an IBWMC;

.2 absence of a BWMP;

.3 absence of a BWRB;

.4 indication that the ship or its equipment does not correspond substantially with the particulars of the IBWMC and BWMP;

.5 absence, serious deterioration or failure of proper operation of equipment required under the BWMP;

.6 the designated officers or crew are not familiar with essential ballast water management procedures including the operation of BWMS and all associated BWMS equipment;

.7 no ballast water management procedures have been implemented on board;

.8 no designated officer has been nominated;

.9 the ship has not complied with the BWMP for management and treatment of ballast water;

.10 result of non-compliance by sampling; or

.11 ballast water has been discharged other than in accordance with the regulations of the BWM Convention (regulation A-2).

Control actions

2.5.4 If a ship is detected to have violated the BWM Convention, the port State may take steps to warn, detain or exclude the ship. The port State, however, may grant such a ship permission to leave the port or offshore terminal for the purpose of discharging ballast water or proceeding to the nearest appropriate repair yard or reception facility available, provided doing so does not present a threat of harm to the environment, human health, property or resources (see notification requirements in paragraphs 3.3 to 3.6 below).

2.5.5 Port States should refrain from applying criminal sanctions or detaining the ship, based on sampling during the trial period. This does not prevent the port State from taking preventive measures to protect its environment, human health, property or resources.

2.5.6 The ship should have evidence that the ballast water management system is type approved and has been maintained and operated in accordance with the ships' Ballast Water Management Plan.

2.5.7 As an alternative to warning, detention or exclusion of the ship, the PSCO may wish to consider the following alternative measures, providing doing so does not present a threat to the environment, human health, property or resources:

.1 retention of all ballast water on board;

.2 require the ship to undertake any repairs required to the BWMS;

.3 permit the ship to proceed to exchange ballast water in a location acceptable to the port State, providing ballast water exchange is still an acceptable practice for the specific ship and such areas are established in accordance with the *Guidelines on designation of areas for ballast water exchange (G14);*

.4 allow the ship to discharge ballast to another ship or to an appropriate shipboard or land-based reception facility; or

.5 allow the ship to manage the ballast water or a portion of it in accordance with a method acceptable to the port State.

CHAPTER 3

REPORTING REQUIREMENTS

3.1 Port State authorities should ensure that, at the completion of an inspection, the master of the ship is provided with a document showing the results of the inspection, details of any action taken by the PSCO and a list of any corrective action to be initiated by the master and/or company. Such reports should be made in accordance with the format in appendix 13 of the *Procedures for port State Control* (resolution A.1052(27), paragraph 4.1.1).

3.2 If a ship has been inspected as a result of a request for investigation from another State, the inspection report should be sent to the requesting State and the flag State (article 10.4).

3.3 In the event that an action is taken in accordance with paragraphs 2.2.4.3, 2.5.1 or 2.5.5:

.1 the port State should inform, in writing, the flag State of the ship concerned, or if this is not possible, the consul or diplomatic representative of the ship concerned, of all the circumstances in which the action was deemed necessary. In addition, the recognized organization responsible for the issue of certificates should be notified (article 11.2); and

.2 in the event that the PSCO is unable to take the intended action, or if the ship has been allowed to proceed to the next port of call, the authorities of the port State should communicate all the facts to the authorities of the country of the next appropriate port of call, to the flag State, and to the recognized organization, where appropriate (article 11.3; resolution A.1052(27), paragraph 4.1.4).

3.4 In the event of a violation of the BWM Convention, the notifications in paragraph 3.3 should be made. In addition, the ship should be notified of the violation and the report forwarded to the flag State should include any associated evidence (article 11.1).

3.5 Where, in the exercise of port State control, a Party denies a foreign ship entry to the ports or offshore terminals under its jurisdiction, whether or not as a result of information about a substandard ship, it should forthwith provide the master and flag State with reasons for the denial of entry (resolution A.1052(27), paragraph 4.1.2).

3.6 In the case of a detention, at least an initial notification should be made to the flag State as soon as practicable. If such notification is made verbally, it should be subsequently confirmed in writing. As a minimum, the notification should include details of the ship's name, the IMO number, copies of Forms A and B as set out in appendix 13 of the Procedures for port State Control, time of detention and copies of any detention order. Likewise, the recognized organizations which have issued the relevant certificates on behalf of the flag State should be notified, where appropriate. The Parties above should also be notified in writing of the release of detention. As a minimum, this information should include the ship's name, the IMO number, the date and time of release and a copy of Form B as set out in appendix 13 of the *Procedures for Port State Control* (resolution A.1052(27), paragraph 4.1.3).

RESOLUTION MEPC.253(67)
adopted on 17 October 2014

MEASURES TO BE TAKEN TO FACILITATE ENTRY INTO FORCE OF THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention) together with four conference resolutions,

NOTING that regulation D-3 of the Annex to the Convention provides that ballast water management systems used to comply with the Convention must be approved by the Administration, taking into account guidelines developed by the Organization, and that regulation D-2 of the same Annex defines the performance standard for ships' ballast water management,

NOTING ALSO resolution MEPC.174(58) by which the Committee adopted the *Guidelines for approval of ballast water management systems (G8)* (Guidelines (G8)),

NOTING IN PARTICULAR that, by resolution MEPC.174(58), the Committee agreed to keep the Guidelines (G8) under review in the light of experience gained with their application,

NOTING FURTHER resolution MEPC.252(67), by which the Committee adopted the *Guidelines for port State control under the BWM Convention,*

RECOGNIZING the concerns of the shipping industry regarding the potential penalization of those owners and operators that have installed and operate ballast water management systems that have been type approved in accordance with Guidelines (G8),

BEING CONSCIOUS of the need to provide certainty and confidence in the application of the Convention, thereby assisting shipping companies, shipowners, managers, ships' crews and operators, as well as the shipbuilding and equipment manufacturing industries, in the timely planning of their operations; and the need to encourage the early installation of ballast water management systems,

HAVING CONSIDERED, at its sixty-seventh session, the recommendation made by the Ballast Water Review Group,

1. AGREES to immediately begin a comprehensive review of Guidelines (G8), which should, at a minimum, address the issues contained in the annex to this resolution;

2. AGREES that the existing Guidelines (G8) should continue to be applied until the application of revised Guidelines (G8) following completion of the review, and that Parties to the Convention should ensure the Guidelines are fully adhered to in any approval application;

3. AGREES that shipowners that have installed type-approved ballast water management systems prior to the application of the revised Guidelines (G8), should not be penalized;

4. AGREES that port States should refrain from applying criminal sanctions or detaining a ship, based on sampling during the trial period described in the report of BLG 17 (BLG 17/18, annex 6) associated with the *Guidance for sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42). This does not prevent the port State from taking preventive measures to protect its environment, human health, property or resources.

ANNEX

ELEMENTS TO BE INCLUDED IN THE REVIEW OF GUIDELINES (G8)

The following elements will be included, as a minimum, as a part of the review of Guidelines (G8), taking into account the associated guidance (resolution MEPC.228(65), BWM.2/Circ.43, BWM.2/Circ.33 and BWM.2/Circ.28):

.1 testing being performed using fresh, brackish and marine waters;

.2 testing considering the effect of temperature in cold and tropical waters on operational effectiveness and environmental acceptability;

.3 specification of standard test organisms for use in testing;

.4 challenge levels set with respect to suspended solids in test water;

.5 type approval testing discounting test runs in the full-scale testing that do not meet the D-2 standard and the results of test runs being "averaged";

.6 type approval testing realistically representing the flow rates the system is approved for;

.7 any differences between type approval protocols of Member States; and

.8 any items raised by, and any data arising from, the Study on the Implementation of the ballast water performance standard described in regulation D-2 of the Convention and any other relevant information provided within the timeline for the review of Guidelines (G8).

RESOLUTION MEPC.228(65)
adopted on 17 May 2013

INFORMATION REPORTING ON TYPE APPROVED BALLAST WATER MANAGEMENT SYSTEMS

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Ballast Water Management Convention) together with four Conference resolutions,

RECALLING FURTHER that, on entry into force, the Ballast Water Management Convention will require ships to install ballast water management systems, which meet the D-2 standard stipulated therein,

RECOGNIZING that the collection and dissemination of accurate information on type-approved ballast water management systems (BWMS) will be beneficial for all interested stakeholders,

NOTING resolution MEPC.175(58) by which the Committee adopted the Information reporting on type-approved ballast water management systems,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its seventeenth session, on the need to revise resolution MEPC.175(58),

1. INVITES Member States, when approving a ballast water management system in accordance with the Guidelines for approval of ballast water management systems (G8), to report the following information to the Organization:

.1 approval date;

.2 name of the Administration;

.3 name of the BWMS;

.4 a copy of the Type Approval Certificate and any appendices which includes details on all imposed limiting conditions on the operation of the BWMS in accordance with paragraph 6.1 of the Guidelines for approval of ballast water management systems (G8) (resolution MEPC.174(58)) as follows: Such limiting conditions to include any applicable environmental conditions (e.g. salinity, UV transmittance, temperature, etc.) and/or system operational parameters (e.g. min/max pressure, pressure differentials, min/max Total Residual Oxidants (TRO), etc.);

.5 an annex to the Type Approval Certificate which contains the test results of each land-based and shipboard test run. Such test results shall include at least the numerical salinity, temperature, flow rates, and where appropriate UV transmittance. In addition, these test results shall include all other relevant variables;

.6 the protocol according to which testing was undertaken, including details on:

.1 whether ambient, cultured or a mixture of test organisms have been used (including a species-level identification for cultured organisms, and an identification to the lowest possible taxonomic level for ambient organisms);

.2 the shipboard test protocol including the operating parameters of the system during successful treatment operations, for example dosage rates, UV intensity and electrical current applied;

.3 energy consumption of the BWMS under normal or tested Treatment Rated Capacity (TRC), if available;

.4 the full test report of the land-based test including all unsuccessful, failed and invalid tests;

.5 the full test report of the shipboard test including all unsuccessful, failed and invalid tests, and detailed information of the test set up and actual flow rate at each test cycle;

.6 QA/QC documentation of the testing facility or body; and

.7 national accreditation of the test facility, if appropriate;

.7 a description of the Active Substance(s), if employed; and

.8 identification of the specific MEPC report and paragraph number granting Final Approval in accordance with the Procedure for approval of ballast water management systems that make use of Active Substances (G9), adopted by resolution MEPC.169(57);

2. INSTRUCTS the Secretariat to make such information available by an appropriate means;

3. REVOKES resolution MEPC.175(58).

RESOLUTION MEPC.206(62)

adopted on 15 July 2011

PROCEDURE FOR APPROVING OTHER METHODS OF BALLAST WATER MANAGEMENT IN ACCORDANCE WITH REGULATION B-3.7 OF THE BWM CONVENTION

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution,

RECALLING ALSO the adoption by the International Conference on Ballast Water Management for Ships, held at the Organization's Headquarters in 2004, of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter "the BWM Convention"),

RECALLING FURTHER that regulation A-2 of the BWM Convention requires that discharge of ballast water shell only be conducted through ballast water management in accordance with the provisions of the Annex to the Convention,

NOTING that regulation B-3.7 of the BWM Convention permits the use of "Other Methods" of ballast water management to achieve at least the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5,

RECOGNIZING that such "Other Methods" should take into account safety considerations relating to the ship and the crew, environmental acceptability, practicality, cost-effectiveness, economics and biological effectiveness and should be approved in principle by the Marine Environment Protection Committee,

HAVING CONSIDERED, at its sixty-second session, the draft Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention, developed by the Sub-Committee on Bulk Liquids and Gases at its fifteenth session,

1. ADOPTS the Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention, as set out in the annex to the present resolution;

2. INVITES Administrations to apply the annexed Procedure as soon as possible, or when the Convention becomes applicable to them;

3. URGES Member States to bring the annexed Procedure to the attention of shipowners, shipbuilders and manufacturers of ballast water management systems, as well as any other parties concerned; and

4. AGREES to keep the Procedure under review.

* * *

ANNEX

PROCEDURE FOR APPROVING OTHER METHODS OF BALLAST WATER MANAGEMENT IN ACCORDANCE WITH REGULATION B-3.7 OF THE BWM CONVENTION

1 INTRODUCTION

1.1 Regulation B-3.7 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the BWM Convention) permits the use of Other Methods of ballast water management to achieve at least the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5, and approved in principle by the MEPC.

1.2 Those developing Other Methods should also take into account: safety considerations relating to the ship and the crew; environmental acceptability (i.e. not causing greater environmental impacts than they solve); practicality (i.e. compatibility with ship design and operations); cost-effectiveness and economics; and biological effectiveness.

1.3 The Procedure for approving Other Methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention (hereafter referred to as "the Procedure"), aims at providing criteria for the evaluation and approval of Other Methods of ballast water management (hereafter referred to as "Other Methods").

1.4 This Procedure has been developed to ensure that these Other Methods provide at least the same level of protection to the environment, human health, property or resources as those methods permitted under regulations B-3.1 to B-3.5.

1.5 Other Methods of ballast water management are to be approved in principle by the Committee prior to approval of an Other Method by the Administration.

1.6 Systems based on an Other Method where Active Substances and Preparations are added to the ballast water, or are generated on board ships by the system, should also be subject to the approval by the Committee in accordance with the Procedure for approval of ballast water management systems that make use of Active Substances (G9).

1.7 All shipboard systems based on an Other Method will also have to gain Type Approval or Prototype Approval, as appropriate, under the Guidelines for approval of ballast water management systems (G8), or Guidelines for approval of prototype ballast water treatment technologies (G10).

1.8 Where an Other Method cannot be type approved due to the nature of the method, the Administration should recommend to the Committee an appropriate method of recognition or certification.

1.9 The environmental impacts of any chemical by-products and/or physical effects formed by an Other Method will also have to be evaluated by the Administration during the approval process, with respect to safety to the environment.

1.10 The Procedure identifies the information to be provided, identifies the responsible parties for providing such information and outlines the approval processes required by the Committee.

1.11 The use of Other Methods of ballast water management should be consistent with the objectives of the Convention – "to prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments, as well as to avoid unwanted side effects from that control, and to encourage developments in related knowledge and technology". Depending on the new technology used in the Other Method, verifications for approval could be different from those specified in paragraph 1.7 but keep the same level of protection.

1.12 Other Methods using organisms are not within the scope of this Procedure.

2 PURPOSE

2.1 The Procedure aims to ensure that any Other Methods approved provide an equivalent level of protection to the standards contained in the BWM Convention. The Procedure will be kept under review and updated by the Committee in light of the experience gained during its application and as the state of knowledge and technology may require.

2.2 The purpose of the Procedure is to:

.1 provide a uniform interpretation and application of the requirements for the approval of Other Methods permitted under regulation B-3.7;

.2 ensure that Other Methods approved by an Administration are capable of at least achieving equivalence to the level of protection provided by the standards of the BWM Convention with respect to the prevention of the transfer of harmful aquatic organisms and pathogens as required by regulations B-3.1 to B-3.5;

.3 assist in determining the information necessary for the approval in principle of Other Methods under regulation B-3.7 of the BWM Convention and identify the roles and responsibilities in providing such information;

.4 assist Administrations in conducting the approval of an Other Method;

.5 provide guidance to manufacturers, shipowners and other interested parties involved in determining the suitability of an Other Method to meet the requirements of the BWM Convention; and

.6 provide the approval process used by the Committee.

3 DEFINITIONS

3.1 For the purposes of this Procedure, the definitions in the Convention apply and:

.1 **Method** means a process developed and designed to reduce the transfer of harmful aquatic organisms through ships' ballast water to meet the requirements specified under regulations B-3.1 to B-3.5 of the BWM Convention.

.2 **Other Method** means an alternative to a Method defined in paragraph 3.1.1 above, which provides a level of protection equivalent to the requirements specified in regulations B-3.1 to B-3.5 of the BWM Convention.

4 APPLICABILITY

4.1 The Procedure applies to all Administrations, Parties to the BWM Convention and other IMO Member States, seeking approval in principle for an Other Method under regulation B-3.7 or assessing or granting approval for such Other Methods. This Procedure is also for the use of the Committee when considering approval in principle.

4.2 Equipment manufacturers wanting to seek approval for an Other Method should also consult this Procedure.

4.3 Ballast water management methods subject to regulation A-4.1 of the BWM Convention are not subject to this procedure or to regulation B-3.7.

5 APPLICATION TO THE COMMITTEE FOR APPROVAL IN PRINCIPLE OF AN OTHER METHOD

5.1 The information provided to support the application for approval in principle should be complete, of sufficient quality and in accordance with this Procedure.

5.2 The applicant for approval in principle of an Other Method should provide independently validated and/or operational proof that the Other Method being submitted:

.1 provides a level of protection at least equivalent to that provided by the requirements specified in regulations B-3.1 to B-3.5 of the BWM Convention; and

.2 is capable of providing a consistent level of protection at all times in all environments/locations.

Equivalence and benchmark criteria for an application for approval in principle of an Other Method

5.3 Applications for Other Methods should contain a fully developed independently validated approach for assessing the level of protection provided by that Other Method against the transfer of harmful aquatic organisms and pathogens and its equivalence to the requirements in regulations B-3.1 to B-3.5 of the BWM Convention and the additional requirements outlined in this Procedure, as appropriate. A possible starting point for such an approach could be a comparison of the level of protection ensured by ballast water management in compliance with regulations B-3.1 to B-3.5 and the level of protection ensured by the Other Method if used on comparable ships.

5.4 Other Methods should demonstrate by risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing, where applicable, that the Other Method is capable of meeting at all times a level of protection that is at least equivalent to the level of protection with respect to the prevention of the transfer of harmful aquatic organisms and pathogens via discharge of ballast water compared to existing requirements. The risk assessment should be at least to the same level of rigour as stipulated in Guidelines (G7).

5.5 Applications for Other Methods should specify the benchmark against which the performance of any systems based on that particular Other Method can be measured. The benchmark would:

.1 enable a transparent comparison by the Committee of the level of protection provided by the Other Method with that provided by the requirements in regulations B-3.1 to B-3.5 of the BWM Convention;

.2 be measurable and able to be evaluated for approval (similar to the requirements of the Convention, i.e. D-1 being a process evaluation, while D-2 is a measurable performance standard);

.3 be verifiable by port and flag States through sampling, records or other processes (to be properly defined, listed and technically explained/clarified, in the pertinent application, in terms of proposed verifications for flag State or port State control inspections to be carried out on board);

.4 need to be contained in the application, agreed by the Committee and then be used for consideration of approval through compliance testing by Port State Control;

.5 provide an assurance that systems based on an Other Method are providing the same level of protection for the environment as the Other Method that has received the approval in principle from the Committee; and

.6 be based on a recognized international standard, where appropriate, so long as they can be proved as equivalent to the existing requirements.

5.6 An Other Method may provide the same level of protection for the environment, human health, property or resources where:

.1 the ballasting and de-ballasting process does not transfer harmful aquatic organisms and pathogens; or

.2 the ballast water discharge contains no harmful aquatic organisms and pathogens.

Sampling protocol criteria for an application for approval in principle of an Other Method

5.7 The application for an Other Method should contain a ballast water sampling and analysis protocol that should be consistent with the Guidelines for ballast water sampling (G2).

Ship and personnel safety criteria for an application for approval in principle of an Other Method

5.8 The application should include a Formal Safety Assessment or a Safety Case to ensure that the Other Method or system based on an Other Method is safe for installation on board ship and any risks to the ship's crew resulting from the system are identified and adequately addressed. This Formal Safety Assessment or Safety Case should be consistent with part 3 of the annex to the Guidelines for approval of ballast water management systems (G8) and approved by the Administration.

6 SUBMISSION PROCESS

6.1 The applicant should evaluate the Other Method against the benchmark according to a protocol that is approved by an Administration.

6.2 The applicant should then prepare an application for the Other Method and submit it to the Member State concerned.

6.3 The Administration should review the application to ensure it is satisfactory (i.e. contains all of the information that is required and the information provided is of a sufficient standard to enable a decision to be made by the Committee). If the application is satisfactory, the Member State should submit a proposal for approval in principle to the Committee taking into account the deadlines prior to the MEPC at which approval in principle is to be sought.

6.4 When in session, the Committee should decide if the proposal is acceptable for consideration by the Committee and set the time frame for the evaluation of the proposal as follows:

.1 the Committee may commission an independent review of the risk assessment method, data and assumptions in order to ensure that a scientifically rigorous analysis has been conducted. The review should be undertaken by independent experts with ecological, aquatic biology, ship design and operation, and risk assessment expertise; and

.2 the reviewers' report should be in written form and circulated to the Parties, Members of the Organization, the United Nations and its Specialized Agencies, intergovernmental organizations having agreements with the Organization and non-governmental organizations in consultative status with the Organization, prior to its consideration by the Committee.

6.5 All proprietary data should be treated as confidential by the Committee, the competent authorities involved, and the independent reviewers, if any. However, all information related to safety and environmental protection, including physical/chemical properties and data on environmental fate and toxicity, should be treated as non-confidential.

6.6 The Committee should evaluate the application for approval in principle of an Other Method in accordance with this Procedure.

7 ASSESSMENT OF EQUIVALENCE

7.1 The Committee should review the benchmarks detailed in the application and, as appropriate, take them into account when assessing equivalence to the level of protection for the environment, human health, property or resources as provided for in regulations B-3.1 to B-3.5.

7.2 Other Methods designed to provide at least an equivalent level of protection with respect to the prevention of the transfer of harmful aquatic organisms and pathogens via discharge of ballast water should demonstrate by risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing, where applicable, that the Other Method is capable of meeting a level of protection at all times that is, at least equivalent to, or better than, the applicable requirements contained in the BWM Convention.

7.3 Risk assessment is the logical process for assigning the likelihood and consequences of specific events, such as entry, establishment or spread of harmful aquatic organisms and pathogens in situations where a direct comparison of application benchmarks with the D-1 and D-2 standards is not possible.

7.4 In undertaking risk assessment to consider and evaluate the equivalence of an Other Method with the existing standards, the risk assessment principles outlined in the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7) should be carefully applied. The lack of full scientific certainty should be carefully considered in the decision-making process.

Equivalence with the D-1 standard

7.5 Other Methods designed to provide equivalence to the D-1 standard can be used only until the ship type, under the BWM Convention, is required to comply with the D-2 standard (unless the system proves it can also provide equivalence to the D-2 standard):

.1 these methods should demonstrate through risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing of systems based on Other Methods, where applicable, that the Other Method is capable of meeting at all times a level of protection that is, at least equivalent to, or better than, regulation D-1 of the BWM Convention;

.2 if there is a question about the environmental impact of an Other Method during its development, such approval should be split in the same way as it is in Procedure (G9). That is, Other Methods should be approved by the Administration and Committee based on independently validated data prior to being tested at sea; and

.3 the relevant water quality parameters (e.g., suspended solids, salinity, oxygen concentration, particulate organic matter) should be reasonably the same in the incoming as well as in the outflowing water.

Equivalence with the D-2 standard

7.6 Other Methods designed to provide equivalence to the D-2 standard should demonstrate through risk assessment, independently validated physical and biological modelling, operational testing of this modelling and full-scale operational testing of systems based on Other Methods, where applicable, that the Other Method is capable of meeting at all times a level of protection that is at least equivalent to, or better than, regulation D-2 of the BWM Convention, as follows:

.1 where appropriate, benchmarks should be based on recognized international standards as long as they can be proven to provide an equivalent level of protection to the D-2 standard;

.2 the description of the main characteristics of the ballast water as well as the absence/presence of harmful aquatic organisms is to be supported by independent verification; and

.3 onboard test results, equipment specification and quality assurance should be available.

8 APPROVAL

8.1 The approval takes place in two steps:

.1 an approval in principle of the Other Method following review and evaluation by the Committee (regulation B-3.7); and

.2 an approval of the Other Method in a manner analogous to Guidelines (G8) and (G10), by the Administration.

Assessment for approval in principle

8.2 The application for approval in principle should be assessed by the Committee to ascertain whether:

.1 the application for approval in principle is complete, of sufficient quality, and in accordance with this Procedure;

.2 the Other Method does not cause any unacceptable adverse effects to environment, human health, property or resources;

.3 the Other Method does not contravene other regulations in the BWM Convention, or any other convention or code applicable to the ship type;

.4 the Other Method ensures at least the same level of protection to the environment, human health, property or resources as those methods permitted under regulations B-3.1 to B-3.5; and

.5 the Procedure for approval set out by the Administration is appropriate.

8.3 The application should not be granted approval in principle when there is absence of information or significant uncertainty.

8.4 The Committee should decide whether to approve in principle the proposal, introduce any modifications thereto, if appropriate, taking into account the reviewers' report.

8.5 The Administration that submitted the application to the Committee should inform in writing the applicant about the decision made with regard to the Other Method.

Approval by the Administration

8.6 An Other Method, having received approval in principle from the Committee, is to be approved by an Administration.

8.7 A shipboard system may need to be assessed for Type Approval.

8.8 The Administration should evaluate an Other Method for safety to the environment, human health, property, or resources.

9 NOTIFICATION OF APPROVAL

9.1 The Committee will record the approval in principle of Other Methods and circulate the list once a year including the following information:

- the document reference of the approval in principle of the Other Method by the Committee;
- name and brief description of the Other Method;
- name of ballast water management system that makes use of the Other Method if appropriate;
- date of approval;
- name of applicant;
- the benchmark that the Other Method is designed to meet, and the methods of assessing compliance to this benchmark;
- copies of or access routes to test reports, test methods, etc. (as resolution MEPC.175(58)); and
- any other specifications, if necessary.

9.2 Administrations, when approving an Other Method should report to the Committee in a manner consistent with resolution MEPC.175(58) "Information reporting on Type Approved ballast water management systems".

10 MODIFICATION

10.1 The holder of an Other Method approval should report any modifications to the Administration.

10.2 Any modifications to an approved Other Method should be re-evaluated in accordance with this Procedure.

11 WITHDRAWAL OF APPROVAL

11.1 The Committee may withdraw any approval in principle in the following circumstances:

.1 if the Other Method or system based on an Other Method no longer conforms to requirements due to amendments of the BWM Convention;

.2 if any data or test records differ materially from data relied upon at the time of approval and are deemed not to satisfy the approval criteria;

.3 if a request for withdrawal of approval is made by the Administration on behalf of the holder of an Other Method approval; and

.4 if unreasonable harm to environment, human health, property or resources is determined to have been caused by an approved Other Method.

11.2 The decision to withdraw an approval in principle should specify all necessary further details, including the date upon which the withdrawal takes effect.

12 USE ON SHIPS

12.1 Ships using an Other Method under regulation B-3.7 of the BWM Convention, to meet their obligations under this Convention, can only do so once the Other Method has been approved in principle by the Committee and has been approved by an Administration.

RESOLUTION MEPC.188(60)
adopted on 24 March 2010

INSTALLATION OF BALLAST WATER MANAGEMENT SYSTEMS ON NEW SHIPS IN ACCORDANCE WITH THE APPLICATION DATES CONTAINED IN THE BALLAST WATER MANAGEMENT CONVENTION (BWM CONVENTION)

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO the adoption by the International Conference on Ballast Water Management for Ships, held at the Organization's Headquarters in 2004, of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (hereinafter "the BWM Convention"),

RECALLING FURTHER that, on entry into force, the BWM Convention will require ships to install ballast water management systems, which meet the D-2 standard stipulated therein,

NOTING that the Assembly, at its twenty-fifth session in November 2007, adopted resolution A.1005(25) on the "Application of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004", which calls on States that have not yet ratified the BWM Convention to do so as soon as possible, and recommends that ships subject to regulation B-3.3 constructed in 2009 should not be required to comply with regulation D-2 until their second annual survey, but no later than 31 December 2011, if type-approved technology is not immediately available to achieve the D-2 standard set forth in the BWM Convention,

NOTING ALSO that resolution A.1005(25) requests the Committee to keep this resolution under review and, in particular, to review the issue of a ship subject to regulation B-3.3 constructed in 2010 and the immediate availability of type-approved technology for such a ship to meet the D-2 standard,

NOTING FURTHER that at its fifty-ninth session the Committee concluded that there are sufficient type-approved ballast water treatment technologies available for ships subject to regulation B-3.3 constructed in 2010 and that no changes to Assembly resolution A.1005(25) are needed,

RECOGNIZING that while the requirements of regulation B-3.3 cannot be enforced before the entry into force of the BWM Convention, it should be clearly understood that the ballast water management systems installed on ships constructed in 2010 will have to meet these requirements once the BWM Convention enters into force,

1. CALLS ON States which have not yet ratified, accepted, approved or acceded to the BWM Convention to do so at their earliest convenience;

2. INVITES Administrations to encourage the installation of ballast water management systems on new ships in accordance with the application dates contained in the BWM Convention; and

3. INVITES Member States to bring this resolution to the attention of shipowners, shipbuilders, and manufacturers of ballast water management systems, as well as any other parties concerned.

RESOLUTION MEPC.163(56)
adopted on 13 July 2007

GUIDELINES FOR BALLAST WATER EXCHANGE IN THE ANTARCTIC TREATY AREA

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that the International Conference on Ballast Water Management for Ships held in February 2004 adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (Ballast Water Management Convention),

MINDFUL of Article 13 of the Ballast Water Management Convention which provides that in order to further the objectives of the Convention, Parties with common interests to protect the environment, human health, property and resources in a given geographical area, in particular, those Parties bordering enclosed and semi-enclosed seas, shall endeavour, taking into account characteristic regional features, to enhance regional co-operation, including through the conclusion of regional agreements consistent with the Ballast Water Management Convention,

BEING AWARE of the designation of Antarctica as a Special Conservation Area and of the measures adopted under the Antarctic Treaty to protect the Antarctic environment and dependent and associated ecosystems,

BEING AWARE ALSO of the requirements of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty regarding conservation of Antarctic fauna and flora and in particular of the precautions taken to prevent the introduction of non-native species to the Antarctic Treaty area,

NOTING that Article 18 of the Ballast Water Management Convention provides that it shall enter into force twelve months after the date on which not less than thirty States, the combined merchant fleets of which constitute not less than thirty-five percent of the gross tonnage of the world's merchant shipping, have become Parties to it in accordance with Article 17 of the Convention and noting further that the Ballast Water Management Convention is yet to enter into force,

CONSCIOUS of the potential for invasive marine organisms to be transported into, or moved between biologically distinct regions within the Antarctic Treaty area by ships in their ballast water,

HAVING CONSIDERED the draft Guidelines for ballast water exchange in the Antarctic Treaty area and the recommendation made by the Sub-Committee on Bulk Liquids and Gases at its eleventh session,

1. ADOPTS the Guidelines for ballast water exchange in the Antarctic Treaty area as set out in the annex to this resolution;

2. INVITES Governments to apply the Guidelines as soon as possible, as an interim measure for all ships entering Antarctic Treaty area before the Ballast Water Management Convention comes into force; and

3. AGREES to keep the Guidelines under review.

* * *

ANNEX

GUIDELINES FOR BALLAST WATER EXCHANGE IN THE ANTARCTIC TREATY AREA

1 The application of these Guidelines should apply to those vessels covered by Article 3 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Ballast Water Management Convention), taking into account the exceptions in regulation A-3 of the Convention. These Guide lines do not replace the requirements of the Ballast Water Management Convention, but provide an interim Ballast Water Regional Management Plan for Antarctica under Article 13(3).

2 If the safety of the ship is in any way jeopardized by a ballast exchange, it should not take place. Additionally these guidelines do not apply to the uptake or discharge of ballast water and sediments for ensuring the safety of the ship in emergency situations or saving life at sea in Antarctic waters.

3 A Ballast Water Management Plan should be prepared for each vessel with ballast tanks entering Antarctic waters, specifically taking into account the problems of ballast water exchange in cold environments and in Antarctic conditions.

4 Each vessel entering Antarctic waters should keep a record of ballast water operations.

5 For vessels needing to discharge ballast water within the Antarctic Treaty area, ballast water should first be exchanged before arrival in Antarctic waters (preferably north of either the Antarctic Polar Frontal Zone or 60oS, whichever is the furthest north) and at least 200 nautical miles from the nearest land in water at least 200 metres deep. (If this is not possible for operational reasons then such exchange should be undertaken in waters at least 50 nautical miles from the nearest land in waters of at least 200 metres depth).

6 Only those tanks that will be discharged in Antarctic waters would need to undergo ballast water exchange following the procedure in paragraph 5. Ballast water exchange of all tanks is encouraged for all vessels that have the potential/capacity to load cargo in Antarctica, as changes in routes and planned activities are frequent during Antarctic voyages due to changing meteorological and sea conditions.

7 If a vessel has taken on ballast water in Antarctic waters and is intending to discharge ballast water in Arctic, sub-Arctic, or sub-Antarctic waters, it is recommended that ballast water should be exchanged north of the Antarctic Polar Frontal Zone, and at least 200 nautical miles from the nearest land in water at least 200 metres deep. (If this is not possible for operational reasons then such exchange should be undertaken in waters at least 50 nautical miles from the nearest land in waters of at least 200 metres depth.)

8 Release of sediments during the cleaning of ballast tanks should not take place in Antarctic waters.

9 For vessels that have spent significant time in the Arctic, ballast water sediment should preferably be discharged and tanks cleaned before entering Antarctic waters (south of 60°S). If this cannot be done then sediment accumulation in ballast tanks should be monitored and sediment should be disposed of in accordance with the ship's Ballast Water Management Plan. If sediments are disposed of at sea, then they should be disposed of in waters at least 200 nautical miles from the shoreline in waters at least 200 metres deep.

10 Governments are invited to exchange information on invasive marine species or anything that will change the perceived risk associated with ballast water.

RESOLUTION A.1088(28)

adopted on 4 December 2013

APPLICATION OF THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

THE ASSEMBLY,

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

RECALLING ALSO the adoption by the International Conference on Ballast Water Management for Ships, held at the Organization's Headquarters in 2004, of the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (hereinafter referred to as "the Convention"),

RECALLING FURTHER resolution A.1005(25) concerning the application of the Convention, and expressing its renewed desire to ensure that the Convention enters into force without further delay so as to provide for accrual of benefits as soon as possible to the aquatic environment from its early, wide and effective implementation,

BEING CONSCIOUS of the need to provide certainty and confidence in the application of the Convention, thereby assisting shipping companies, shipowners, managers and operators, as well as the shipbuilding and equipment manufacturing industries, in the timely planning of their operations; and the need to encourage the early installation of ballast water management systems,

BEARING IN MIND that the International Conference on Ballast Water Management for Ships adopted regulation B-3 to ensure a smooth transition to the D-2 performance standard of the Convention between the years 2009 and 2019,

RECOGNIZING that the passage of time since adoption of the Convention has resulted in uncertainty for ships regarding the application of regulation B-3, and that such uncertainty can be mitigated through the application of an appropriate timeline for enforcement of regulations D-1 (ballast water exchange standard) and D-2 (ballast water performance standard), upon entry into force of the Convention,

1. CALLS ON States that have not already done so to ratify, accept, approve or accede to the Convention as soon as possible;

2. RECOMMENDS that, notwithstanding the schedule set forth in regulation B-3, upon entry into force of the Convention, each Party enforce the standards in regulations D-1 and D-2 in accordance with the following schedule:

.1 a ship subject to regulations B-3.3 or B-3.5, constructed before the entry into force of the Convention, will not be required to comply with regulation D-2 until its first renewal survey following the date of entry into force of the Convention;

.2 a ship subject to regulations B-3.1.1, B-3.1.2 or B-3.4 will not be required to comply with regulation D-2 until its first renewal survey following the anniversary date of delivery of the ship in the year of compliance with the standard applicable to the ship;

.3 notwithstanding paragraph 2.2, where the Convention enters into force after the year 2014, a ship subject to regulation B-3.1.1 will not be required to comply with regulation D-2 until its first renewal survey following the date of entry into force of the Convention;

.4 notwithstanding paragraph 2.2, where the Convention enters into force after the year 2016, a ship

subject to regulations B-3.1.2 or B-3.4 will not be required to comply with regulation D-2 until its first renewal survey following the date of entry into force of the Convention;

.5 a ship referred to in paragraphs 2.1 to 2.4 will be required to comply with either regulation D-1 or regulation D-2 until such time as regulation D-2 is enforced;

.6 the renewal survey referred to in paragraphs 2.1 to 2.4 is the renewal survey associated with the International Oil Pollution Prevention Certificate under MARPOL Annex I;

3. REQUESTS that the Marine Environment Protection Committee keep this resolution under review and report back to the Assembly as appropriate;

4. RECOMMENDS that, as soon as possible after entry into force of the Convention, regulation B-3 be amended consistent with the understanding reflected in paragraph 2 of this resolution, with the date of acceptance of the amendment to occur as soon as practicable after its adoption;

5. REVOKES resolution A.1005(25).

2.4 IMO BWM circulars related to the implementation of the BWM Convention

IMO BWM.2/Circ.52 of 15 April 2014

Guidance on entry or re-entry of ships into exclusive operation within waters under the jurisdiction of a single Party

1. The Marine Environment Protection Committee, at its sixty-sixth session (31 March to 4 April 2014), approved the Guidance on entry or re-entry of ships into exclusive operation within waters under the jurisdiction of a single Party as set out in the annex.

2. Member Governments are invited to bring the Guidance to the attention of all parties concerned.

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ANNEX

GUIDANCE ON ENTRY OR RE-ENTRY OF SHIPS INTO EXCLUSIVE OPERATION WITHIN WATERS UNDER THE JURISDICTION OF A SINGLE PARTY

Background

1 Article 3 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention), identifies the ships to which the Convention applies and does not apply. Article 3.1 of the Convention includes all ships entitled to fly the flag of a Party, and ships not entitled to fly the flag of a Party, but that operate under the authority of a Party, except as provided otherwise in the Convention.

2 Articles 3.2(b) to 3.2(d) set out conditions under which the Convention does not apply to a ship of a Party that operates only in waters under the jurisdiction of that Party, or another Party, or in such waters and on the high seas, respectively. Such ships should be subjected to the appropriate national policies, strategies or programmes for ballast water management of the Party or Parties established pursuant to article 4.2.

3 Ships operating pursuant to articles 3.2(b) to 3.2(d) that cease to operate exclusively in the relevant waters lose their exclusion from the Convention, which then fully applies to them on an ongoing basis, except as provided in this Guidance.

Purpose

4 The purpose of this Guidance is to provide advice on entry or re-entry into exclusive operation pursuant to articles 3.2(b) to 3.2(d), which will assist Administrations with respect to a number of situations, including:

.1 ships (e.g. mobile offshore units) that may be assigned to extended operations in waters under the jurisdiction of a single Party following an international voyage or voyages; and

.2 ships whose operations are usually within waters under their jurisdiction, but who may occasionally need to leave these waters and return (e.g. to visit a dry-dock). Such ships may consider that regulations A-4, B-3.6 and B-3.7 provide options that are particularly attractive for short-term compliance with the Convention.

5 The provisions of this Guidance that pertain to entry into exclusive operation do not apply to a ship that is launched into the waters of the Party within which it is constructed until it requires an International Ballast Water Management Certificate.

Guidance

6 Subject to the conditions of articles 3.2(b) to 3.2(d) concerning the environment, human health, property and resources, the application of the Convention to a ship of a Party may cease:

.1 pursuant to article 3.2(b), if the ship enters or re-enters into exclusive operation in waters under the jurisdiction of that Party;

.2 pursuant to article 3.2(c), if the ship enters or re-enters into exclusive operation in waters under the jurisdiction of another Party, subject to the authorization of the latter Party for such cessation; and

.3 pursuant to article 3.2(d), if the ship enters or re-enters into exclusive operation in waters under the jurisdiction of one Party and on the high seas, unless the ship has not been granted an authorization pursuant to article 3.2(c).

7 Before ceasing application of the Convention to a ship referenced in paragraph 4, the Administration (and authorizing Party, if applicable) should verify that the ship:

.1 is in compliance with the Convention, and holds a valid International Ballast Water Management Certificate if required to do so;

.2 has fully discharged all ballast water, including any residual ballast water, and has completely removed and disposed of all sediments, in accordance with the Convention and the ship's approved ballast water management plan;

.3 has a procedure in its approved ballast water management plan for thoroughly cleaning its ballast water tanks, piping and equipment that is satisfactory to the Administration (and authorizing Party, if applicable); and

.4 has carried out the procedure described in subparagraph 7.3, above, to the satisfaction of the Administration (and authorizing Party, if applicable).

8 Upon cessation of the application of the Convention to a ship, any International Ballast Water Management Certificate issued to the ship should be withdrawn.

BWM.2/Circ.46 of 31 May 2013

Application of the BWM Convention to Mobile Offshore Units

1. The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), approved the circular on Application of the BWM Convention to Mobile Offshore Units, as set out in the annex.

2. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

APPLICATION OF THE BWM CONVENTION TO MOBILE OFFSHORE UNITS

International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004

Article 1.12 "Ship means a vessel of any type whatsoever operating in the aquatic environment and includes submersibles, floating craft, floating platforms, FSUs and FPSOs."

Regulation A-3

Exceptions

"The requirements of regulation B-3, or any measures adopted by a Party pursuant to article 2.3 and section C, shall not apply to:

.5 the discharge of ballast water and sediments from a ship at the same location where the whole of that ballast water and those sediments originated and provided that no mixing with unmanaged ballast water and sediments from other areas has occurred. If mixing has occurred, the ballast water taken from other areas is subject to ballast water management in accordance with this annex."

INTERPRETATION

At the location of operation

1 Preload tanks – for preloading of self-elevating units' (SEU) leg foundation, seawater is taken on board into the preload tanks. This seawater may be discharged, without management, at the same location provided that no mixing with unmanaged seawater and sediments from other areas has occurred.

2 Column stabilized units (CSU) – at its location of operation, seawater is taken on board the CSU into the ballast tanks to achieve the required operational draft. The seawater and sediment in the ballast tanks may be discharged, without management, at the same location provided that no mixing with unmanaged seawater and sediments from other areas has occurred.

3 Management of residual seawater and sediment in preload tanks of SEUs and ballast tanks of CSUs – residual seawater and sediments in the tanks should be managed if these tanks are to be ready for a different area of operation. A possible method for management is by means of internal recirculation. Other methods of ballast water management capable of achieving the D-2 standard are also acceptable.

Transit to other areas

4 SEUs and CSUs take on board ballast water and discharge it for transit to other areas. The transit

ballast water and sediments remaining in the preload and operational ballast tanks of the mobile offshore units may be treated by an appropriately approved internal circulation method. Other methods of ballast water management, capable of providing the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5, may also be acceptable.

Regulation D-2
Ballast Water Performance Standard

"1 Ships conducting ballast water management in accordance with this regulation 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 described in paragraph 2.

2 Indicator microbes, as a human health standard, shall include:

.1 Toxicogenic *Vibrio cholerae* (O1 and O139) with less than 1 colony-forming unit (cfu) per 100 millilitres or less than 1 cfu per 1 gram (wet weight) zooplankton samples;

.2 *Escherichia coli* less than 250 cfu per 100 millilitres;

.3 Intestinal Enterococci less than 100 cfu per 100 millilitres."

INTERPRETATION

Internal circulation method

5 Treatment of any residual seawater, and sediments as well as any transit ballast water using a ballast water management system, approved in accordance with the Convention, incorporating internal circulation may be accepted. This method does not treat the ballast water during the uptake or discharge cycles, but would treat the water only after it has been pumped into the tanks. Other methods of ballast water management, capable of providing the same level of protection to the environment, human health, property or resources as described in regulations B-3.1 to B-3.5, may also be acceptable. If the ballast water management system employs Active Substances, measures such as neutralization may be needed prior to final discharge of the managed ballast water.

Regulation E-1
Surveys

"1 Ships of 400 gross tonnage and above to which this Convention applies, excluding floating platforms, FSUs and FPSOs, shall be subject to surveys specified below:

2 The Administration shall establish appropriate measures for ships that are not subject to the provisions of paragraph 1 in order to ensure that appropriate provisions of this Convention are complied with."

INTERPRETATION

6 Mobile offshore units should comply with the provisions of the Convention and should be surveyed and issued with an International Ballast Water Management Certificate, according to regulations E-1 and E-2 of the Convention, as applicable.

IMO BWM.2/Circ.45 of 30 May 2013

Clarification of "major conversion" as defined in regulation A-1.5 of the BWM Convention

1. The Marine Environment Protection Committee, at its sixty-fourth session (1 to 5 October 2012), concurred with the clarification proposed by Japan (document MEPC 64/2/11) with regard to the definition of "major conversion" contained in regulation A-1.5 of the BWM Convention, and instructed the Secretariat to prepare a draft circular to facilitate the dissemination of this clarification for consideration by MEPC 65.

2. The Marine Environment Protection Committee, at its sixty-fifth session (13 to 17 May 2013), considered the proposal by IACS (document MEPC 65/2/12), agreed to include a further clarification of "major conversion" with respect to changing of ship type, and approved the text of the circular as set out in the annex.

3. Member Governments are invited to bring this circular to the attention of all parties concerned.

***

ANNEX

CLARIFICATION OF "MAJOR CONVERSION" AS DEFINED IN REGULATION A-1.5 OF THE BWM CONVENTION

1 Regulations A-1 of the International Convention for Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) provides:

"4 ***Constructed*** in respect of a ship means a stage of construction where:

.1 the keel is laid; or

.2 construction identifiable with the specific ship begins; or

.3 assembly of the ship has commenced comprising at least 50 tonnes or 1 per cent of the estimated mass of all structural material, whichever is less; or

.4 the ship undergoes a major conversion.

5 ***Major conversion*** means a conversion of a ship:

.1 which changes its ballast water carrying capacity by 15 per cent or greater, or

.2 which change the ship type, or

.3 which, in the opinion of the Administration, is projected to prolong its life by ten years or more, or

.4 which results in modifications to its ballast water system other than component replacement-in-kind. Conversion of a ship to meet the provisions of regulation D-1 shall not be deemed to constitute a major conversion for the purpose of this annex."

2 The BWM Convention does not, however, stipulate clearly whether the new installation of ballast water management systems should be treated as a "major conversion".

3 The Marine Environment Protection Committee, at its sixty-fourth session, agreed that new installation of ballast water management systems should not be treated as a "major conversion" as defined in regulation A-1.5 of the BWM Convention.

4 The Marine Environment Protection Committee, at its sixty-fifth session, with respect to paragraph 5.2 of regulation A-1, agreed that a change of ship type should be considered to refer to a conversion that:

.1 substantially alters the dimensions or carrying capacity of the ship; or

.2 changes the type of cargo carried through a major alteration of the ship.

IMO BWM.2/Circ.44 of 29 May 2013

Options for ballast water management for Offshore Support Vessels in accordance with the BWM Convention

1. The Marine Environment Protection Committee, at its sixty-fourth session (1 to 5 October 2012), instructed the BLG Sub-Committee to initiate the development of a circular on implementation of the BWM Convention for offshore support vessels.

2. MEPC 65 (13 to 17 May 2013) approved the Options for ballast water management for Offshore Support Vessels in accordance with the BWM Convention, agreed by BLG 17 (4 to 8 February 2013), as set out in the annex.

3. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

OPTIONS FOR BALLAST WATER MANAGEMENT FOR OFFSHORE SUPPORT VESSELS IN ACCORDANCE WITH THE BWM CONVENTION

1 INTRODUCTION

1.1 These procedures are intended to relate to the activities of Offshore Support Vessels. Operationally, these vessels differ from the operational models associated with deep-sea trading vessels by being designed to operate in near coastal waters characterized by carrying materials to facilities and vessels working in offshore energy fields.

1.2 The purpose of these procedures is to provide options available for complying with the requirements of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the Convention).

1.3 Ballast water management should be consistent with the objectives of the Convention – "to prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments, as well as to avoid unwanted side effects from that control, and to encourage developments in related knowledge and technology". Depending on the option used, verification for approvals could differ from those specified in paragraph 1.7 of resolution MEPC.206(62), but keep the same level of protection.

1.4 Resolution MEPC.127(53) contains the *Guidelines for ballast water management and development of ballast water management plans (G4)*, which includes part A, chapter 1, "Ship operational procedures".

1.5 The application of the current measures should be decided considering the principles of risk analysis and taking into account the operational condition of the ship.

2 APPLICATION

2.1 The methods of compliance contained in paragraph 3 below are intended to provide options for meeting the functional goals of the Ballast Water Management Convention for Offshore Support Vessels.

2.2 The Offshore Support Vessels' approved Ballast Water Management Plans should meet the requirements and follow the form set out by resolution MEPC.127(53). An Administration approved plan may address circumstances specific to operation in waters under the jurisdiction of another party subject to the authorization of that party with the functional premise describing the vessel and the operational model that the vessel is operating under and present viable methods of complying with the objectives of the Convention.

2.3 In line with the Convention, Administrations may allow other ship types to apply the optional methods identified in this document, if found appropriate.

3 METHODS OF COMPLIANCE

3.1 Generally the options for compliance for Offshore Support Vessels will be identified on the ships' International Ballast Water Management Certificate and in the Ballast Water Management Plan. The general understanding is that the options may include the following:

.1 use of an "other method" of ballast water management as per regulation B-3.7 of the Convention following resolution MEPC.206(62);

.2 exemption, as per regulation A-4 of the Convention, following the *Guidelines for risk assessment under regulation A-4 (G7);*

.3 use of ballast water determined by the coastal State as being sourced from the "same location" as the point of discharge (as per regulation A-3.5);

.4 use of temporary ballast water management systems may be allowed for the purposes of undertaking activities outside those considered normal, routine support activities for compliance with the objectives of the Convention. If, or when available, a temporary BWMS appliance is installed, the unit should comply with the relevant approval processes promulgated by the flag Administration in accordance with the Convention and associated guidelines;

.5 use of permanent or temporary BWMS installed aboard another vessel operating from the same port or locality as a local reception facility, with the approval of the flag Administration and the acceptance of the local coastal State Administration, for the treatment of unmanaged ballast water; and

.6 meeting the regulation D-2 discharge standard through permanent installation of a Type Approved ballast water management system.

3.2 Drill water or water taken and stored on board for the purpose of protecting low flash point liquid (LFL) tanks, which is not discharged into the environment, is not subject to the requirements of the Convention.

4 SURVEY AND CERTIFICATION REQUIREMENTS

4.1 Generally, the process of survey and certification follows section E of the Convention.

IMO BWM.2/Circ.43 of 29 May 2013

Amendments to the Guidance for Administrations on the type approval process for ballast water management systems in accordance with Guidelines (G8) (BWM.2/Circ.28)

1. The Marine Environment Protection Committee, at its sixty-first session (27 September to 1 October 2010), approved the Guidance for Administrations on the type approval process for ballast water management systems in accordance with Guidelines (G8) developed by the BLG Sub-Committee at its fourteenth session (8 to 12 February 2010) as disseminated in BWM.2/Circ.28.

2. MEPC 65 (13 to 17 May 2013) approved amendments to BWM.2/Circ.28, agreed by BLG 17 (4 to 8 February 2013), as set out in annex 1.

3. For ease of reference, the entire text of the Guidance for Administrations on the type approval process for ballast water management systems in accordance with Guidelines (G8), as amended by MEPC 65, is set out in annex 2.

4. The text of the Guidance, as set out in annex 2, supersedes the text contained in BWM.2/Circ.28.

5. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX 1

AMENDMENTS TO THE GUIDANCE FOR ADMINISTRATIONS ON THE TYPE APPROVAL PROCESS FOR BALLAST WATER MANAGEMENT SYSTEMS IN ACCORDANCE WITH GUIDELINES (G8) (BWM.2/CIRC.28)

1 Paragraphs 3.1.14 and 3.1.15 are replaced by the following:

"3.1.14 Provided the following, when submitting the Type Approval application:

.1 sufficient information to verify operation in different salinity ranges (fresh, brackish and marine water) in which the BWMS will operate;

.2 sufficient information to verify operation in the different temperature ranges (cold, temperate and tropical) in which the BWMS will operate;

.3 sufficient information to verify operation with the different sediment loads under which the BWMS will operate;

.4 sufficient information to verify operation of the minimum effective treatment flow rate as well as the maximum Treatment Rated Capacity (TRC) including the duration of these tests; and

.5 suggestions for improvements of the installation related to safety or additional testing R&D,

3.1.15 Made all laboratory-scale and, if appropriate, full-scale land-based test results and documentation available, including all unsuccessful, failed and invalid tests, to the Administration; and"

2 A new paragraph 3.1.16 is added as follows:

"3.1.16 Made all shipboard test results and documents available, including all unsuccessful, failed and invalid tests as well as detailed information of the test set up and flow rate at each test cycle, to the Administration."

3 A new paragraph 3.2 is added as follows:

"3.2 In accordance with paragraphs 4.10 to 4.14 of Guidelines (G8), Administrations should ensure that type approved BWMS have a suitable self-monitoring system that will monitor and record sufficient data to verify correct operation of the system. Administrations should make every effort to ensure that newly installed BWMS that have already been granted Type Approval meet this recommendation within one year following approval of this circular. Administrations should issue treatment system particulars, including details of the self-monitoring system (as described in document MEPC 61/INF.19), for all type-approved systems."

4 Paragraph 5.2.13 is replaced with the following:

"5.2.13 A safety and hazard assessment of the installation, operation and maintenance of the BWMS on the shipboard test is undertaken and approved in line with the technical guidance developed by the Organization (BWM.2/Circ.20), and includes as a minimum:

.1 any potential impact on the crew health and safety; and

.2 references to the classification society safety and hazard rules and recommendations."

5 Paragraph 5.3.4 is replaced with the following:

"5.3.4 In accordance with Guidelines (G8), the appendix of the Type Approval Certificate should include details on all imposed limiting conditions on the operation of the BWMS. Such limiting conditions to include any applicable environmental conditions (e.g. salinity, UV transmittance, temperature, etc.) and/or system operational parameters (e.g. min/max pressure, pressure differentials, min/max Total Residual Oxidants (TRO), etc.)."

6 Paragraph 5.3.5 is replaced with the following:

"5.3.5 An annex to the Type Approval Certificate should contain the test results of each land-based and shipboard test run. Such test results shall include at least the numerical salinity, temperature, flow rates, and where appropriate UV transmittance. In addition, these test results shall include all other relevant variables."

7 Paragraph 6.1 is replaced with the following:

"6.1 The Administration should forward a report of the Type Approval process to the Organization including the relevant documentation as specified in resolution MEPC.228(65)."

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ANNEX 2

GUIDANCE FOR ADMINISTRATIONS ON THE TYPE APPROVAL PROCESS FOR BALLAST WATER MANAGEMENT SYSTEMS IN ACCORDANCE WITH GUIDELINES (G8)

1 PURPOSE

1.1 This document provides guidance for Administrations on the procedure for evaluating an application for Type Approval of a ballast water management system (BWMS), in accordance with the *Guidelines for approval of ballast water management systems (G8)*. This document can act as an aide-memoire for Administrations and is not intended, in any way, to interfere with the authority of an Administration.

1.2 This document provides guidance on interpretation of Guidelines (G8) and does not replace or supersede the requirements of those Guidelines.

1.3 This document is intended to provide guidance to Administrations on the details of the Type Approval to be reported to the Committee.

2 KEY DOCUMENTS

2.1 In evaluating an application for Type Approval of a BWMS, the latest version of the following documents should be consulted:

- The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention);
- *Guidelines for approval of ballast water management systems (G8)*;
- *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*;
- *Guidelines for ballast water sampling (G2)*;
- *Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship's crew resulting from the treatment process*;
- Resolution MEPC.175(58) – *Information reporting on type-approved ballast water management systems*;
- Methodology for information gathering and conduct of work of the GESAMP-BWWG; and
- Other pertinent ballast water management resolutions, guidance and circulars.

3 RECOMMENDATIONS FOR REQUIREMENTS OF MANUFACTURERS OR THEIR AGENTS

3.1 To facilitate Type Approval of a BWMS, the Administration should ensure that the manufacturers, or their agents have, at minimum:

.1 been informed if the Administration delegates to or utilizes the services of a third party quality assurance organization (e.g. Recognized Organization, nominated body, classification society, surveyors, etc.) in some, or all of the Type Approval processes;

.2 understood the steps and requirements of the processes outlined in the documents listed in section 2 of this document;

.3 a fully working system built that can be used in the Type Approval process. It should be noted that the construction procedures and materials for the unit tested need to be the same as for the follow-on production units;

.4 undertaken preliminary testing to ensure that their BWMS is viable, will meet the D-2 standard of the BWM Convention, will work on board a ship and that the system has been determined not to pose any unacceptable risk to the environment;

.5 understood the extent of testing that needs to be completed by a recognized testing facility, including toxicity analysis;

.6 provided a description of the preliminary test to the Administration that should at least include the following:

.1 the test set-up, including sampling points;

.2 responsible persons/organizations for all or portions of the preliminary testing;

.3 possible Quality Management Plan (QMP) of the testing facility;

.4 testing laboratories that will be used;

.5 Quality Assurance Project Plan (QAPP) for the preliminary test; and

.6 provision for survey of the test facility, if required;

.7 provided a detailed report of the preliminary test results including, at least:

.1 toxicity data;

.2 Active Substances if relevant; and

.3 any other chemicals generated during the process;

.8 an understanding of whether the system under consideration, uses an Active Substance, as defined in the BWM Convention. If it utilizes an Active Substance, the system will require additional approval under Procedure (G9), whilst the systems not using an Active Substance only need approval under Guidelines (G8);

.9 a contractual agreement to undertake the shipboard testing needed under Guidelines (G8) with the owner of a suitable ship;

.10 arranged for a trained person to be present at the land-based testing facility to operate the equipment being type approved and ensure that for the shipboard test the ship's crew is familiar with the equipment and sufficiently trained to operate the equipment;

.11 consulted with the classification society that the ship undertaking the shipboard testing is being registered, where necessary, and obtained approval for installation of the BWMS;

.12 demonstrated by using mathematical modelling and/or calculations or by full-scale shipboard testing, that any up or down scaling will not affect the ultimate functioning and effectiveness on board a ship of the type and size for which the equipment will be certified. In doing so, the manufacturers should take into account all relevant guidance developed by the Organization;

.13 prepared a Type Approval application in compliance with Guidelines (G8), annex, part 1, that includes at least the following:

.1 detailed description of the design, construction, operation and functioning of the BWMS;

.2 preliminary assessment of the corrosion effects of the system proposed;

.3 preliminary test results;

.4 technical Manual;

.5 BWMS piping and instrumentation diagram (P&ID);

.6 link to the provisions required in a ballast water management plan;

.7 environmental and public health effects; and

.8 specific salinities to be tested;

.14 provided the following, when submitting the Type Approval application:

.1 sufficient information to verify operation in different salinity ranges (fresh, brackish and marine water) in which the BWMS will operate;

.2 sufficient information to verify operation in the different temperature ranges (cold, temperate and tropical) in which the BWMS will operate;

.3 sufficient information to verify operation with the different sediment loads under which the BWMS will operate;

.4 sufficient information to verify operation of the minimum effective treatment flow rate as well as the maximum Treatment Rated Capacity (TRC) including the duration of these tests; and

.5 suggestions for improvements of the installation related to safety or additional testing R&D;

.15 made all laboratory-scale and, if appropriate, full-scale land-based test results and documentation available, including all unsuccessful, failed and invalid tests, to the Administration; and

.16 made all shipboard test results and documents available, including all unsuccessful, failed and invalid tests as well as detailed information of the test set up and flow rate at each test cycle, to the Administration.

3.2 In accordance with paragraphs 4.10 to 4.14 of Guidelines (G8), Administrations should ensure that type approved BWMS have a suitable self-monitoring system that will monitor and record sufficient data to verify correct operation of the system. Administrations should make every effort to ensure that newly installed BWMS that have already been granted Type Approval meet this recommendation within one year following approval of this circular. Administrations should issue treatment system particulars, including details of the self-monitoring system (as described in document MEPC 61/INF.19), for all type approved systems.

4 RECOMMENDATIONS FOR FACILITATING A TYPE APPROVAL EVALUATION

4.1 For those Administrations using third party quality assurance organizations, due care should be taken to ensure all such arrangements are in place prior to initiating the Type Approval programme.

4.2 The Administration should provide the applicant with a document outlining contact details, the expected amount of time between submission and decision and any other requirements separate from the procedures and requirements outlined in the documents listed in section 2 of this document.

4.3 The Administration should verify that any recommendations made by the Committee during Basic and Final Approval have been addressed prior to issuing the Type Approval Certificate. In accordance with resolution MEPC.175(58), the Administration should submit the final report of land-based and shipboard tests with the notification of type approval to IMO. The reports should be available to Member States.

4.4 The Administration may certify a range of the BWMS capacities employing the same principles and technology, but due consideration should be given to limitations on performance which might arise from scaling up or scaling down.

4.5 The Administration should, in particular, review Standard Operating Procedures (SOP) for which an international standard has not been established yet.

5 APPROVAL PROCESS

5.1 Under the provisions of the BWM Convention, a BWMS is to be approved in accordance with Guidelines (G8) and, where appropriate, Procedure (G9).

5.2 The Administration should verify that the following issues have been specifically addressed by the manufacturer and, if the evaluation of the system is carried out by a third party organization, these issues should be relayed to the Administration to enable a decision on:

.1 a comprehensive explanation of the physical and/or biochemical treatment processes used by the BWMS to meet the D-2 Standard in the BWM Convention. This should be undertaken by the manufacturer and any supporting data should be submitted in writing. Any system which makes use of, or generates, Active Substances, Relevant Chemicals, or free radicals during the treatment process to eliminate organisms in order to comply with the Convention should be submitted to the Organization for review under Procedure (G9), (Procedure (G9), paragraph 3.3);

.2 whether a BWMS makes use of an Active Substance or not remains the prerogative of the responsible Administration. In making that determination, Administrations should take into account relevant GESAMP-BWWG recommendations and Committee decisions as to whether a system should be subject to approval under Procedure (G9). When an Administration is unsure of whether a BWMS is subject to Procedure (G9), it may choose to submit such system for review under that Procedure (G9) (MEPC 59/24, paragraph 2.16);

.3 the BWMSs that the Administration determines are not subject to Procedure (G9), as provided in paragraphs 2.3.6 and 2.3.30.4 of the annex to Guidelines (G8), the toxicity testing procedures in paragraphs 5.2.2 to 5.2.7 of Procedure (G9) should be used when the system could reasonably be expected to result in changes to the treated water such that adverse impacts to receiving waters might occur upon discharge;

.4 the approval documents that should include a piping and instrumentation diagram (P&ID) with parts list and material specification. Furthermore, wiring diagrams, function description of the control and monitoring equipment and description of regulator circuit of the BWMS;

.5 information on the preliminary testing (methodology, test water composition, salinities tested, sampling, analysis laboratories, etc.);

.6 accreditation of Guidelines (G8) land-based testing facility or body including their quality management plan (QMP) and quality assurance project plan (QAPP) to be used by the manufacturer for land-based testing;

.7 approval and subsequent verification of the design, construction, operation and functioning of the equipment used for land-based and shipboard testing;

.8 approval and subsequent verification of the land-based and shipboard test methodology, including the composition of the test water, and specific salinities to be tested which should be in line with Guidelines (G8), Procedure (G9) and the Methodology for information gathering and conduct of work of the GESAMP-BWWG as appropriate (waiver for multiple testing required);

.9 approval and subsequent verification of the methodology used to take and store samples, the laboratory testing, the frequency of sampling, and the analysis procedure for samples from land-based and shipboard testing;

.10 approval and subsequent verification of the design, construction, operation and functioning of the equipment used for testing;

.11 if the system is using an Active Substance, then the applications for Final Approval will have to be checked and approved by the Administration prior to making a proposal for approval to the Organization. In addition, the cost-recovery fee for the scientific services provided by the GESAMP-BWWG will have to be submitted;

.12 a safety assessment of the storage and handling of any chemicals is undertaken and approved in line with the technical guidance developed by the Organization;

.13 a safety and hazard assessment of the installation, operation and maintenance of the BWMS on the shipboard test is undertaken and approved in line with the technical guidance developed by the Organization (BWM.2/Circ.20), and includes as a minimum:

.1 any potential impact on the crew health and safety; and

.2 references to the classification society safety and hazard rules and recommendations;

.14 all electrical equipment used to operate the BWMS should be of a certified safety type required by the applicable national or international standard in respect of the hazardous areas where it is located; and

.15 results of environmental testing as specified in part 3 of the annex to Guidelines (G8).

5.3 For issuance of the Type Approval Certificate, the Administration should set the following requirements and provisions:

.1 the validity of the approval should be revisited as appropriate;

.2 in due time before the expiration of the approval, the manufacturer should prepare a report detailing the experiences with the system, including the results of any scientific research relevant to the system, as well as any results of port State controls, if available;

.3 the occurrence of any unexpected harmful consequences of the operation of the BWMS should be reported by the manufacturer to the Administration immediately;

.4 in accordance with Guidelines (G8), the appendix of the Type Approval Certificate should include details on all imposed limiting conditions on the operation of the BWMS. Such limiting conditions to include any applicable environmental conditions (e.g. salinity, UV transmittance, temperature, etc.) and/or system operational parameters (e.g. min/max pressure, pressure differentials, min/max Total Residual Oxidants (TRO), etc.);

.5 an annex to the Type Approval Certificate should contain the test results of each land-based and shipboard test run. Such test results shall include at least the numerical salinity, temperature, flow rates, and where appropriate UV transmittance. In addition, these test results shall include all other relevant variables;

.6 the Type Approval Certificate should specify the components of the BWMS that are type approved, including the manufacturer of each component; their operating ranges, including temperature, specific salinity and specify the possibility to use other similar components (like filters for example) and the criteria for allowing such use;

.7 a separate Type Approval Certificate should be provided for each type or model of the BWMS. However, if Administrations wish to do otherwise, it is recommended that the different types and models are clearly stated, the test each type and model has undergone

clearly referred to with test results, operating ranges, salinity, TRC, etc.;

.8 all accidents (e.g. accidental exposure, leakage) related to the BWMS should be reported;

.9 any indications that the system is not performing up to the standards set by the BWM Convention, the guidelines and/or any additional provisions set by the Administration should be reported by the manufacturer to the Administration immediately;

.10 the Administration should have the opportunity to revoke the approval if these requirements are not met; and

.11 MSC circular MSC.1/Circ.1221 – "Validity of Type Approval Certification for marine products" should apply.

6 REPORTING OF THE TYPE APPROVAL

6.1 The Administration should forward a report of the Type Approval process to the Organization including the relevant documentation as specified in resolution MEPC.228(65).

6.2 In particular, where under Procedure (G9) the Final Approval has been granted with recommendations by the GESAMP-BWWG, evidence that these recommendations have been satisfactorily addressed at Type Approval should be provided to the Organization. The report should specify the findings of the Administration together with any non-confidential information according to Procedure (G9).

IMO BWM.2/Circ.42/Rev.1 of 28 May 2015

Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)

1 The Marine Environment Protection Committee, at its fifty-eighth session (October 2008), following the adoption of the *Guidelines for ballast water sampling (G2)* (resolution MEPC.173(58)), instructed the Sub-Committee on Bulk Liquids and Gases (BLG) to develop, as a matter of high priority, a circular to provide sampling and analysis guidance.

2 MEPC 65 (13 to 17 May 2013) approved BWM.2/Circ.42 on *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)*, as agreed by BLG 17 (4 to 8 February 2013).

3 MEPC 66 (31 March to 4 April 2014) had invited Member Governments and international organizations to submit further information and proposals related to ballast water sampling, analysis and contingency measures to the Sub-Committee on Pollution Prevention and Response (PPR), with a view to further developing and improving the relevant guidance documents and guidelines.

4 MEPC 68 (11 to 15 May 2015) approved the revised *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2),* as agreed by PPR 2 (19 to 23 January 2015), set out in the annex.

5 Member Governments are invited to bring the annexed Guidance to the attention of all parties concerned.

6 This circular supersedes BWM.2/Circ.42.

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ANNEX 1

GUIDANCE ON BALLAST WATER SAMPLING AND ANALYSIS FOR TRIAL USE IN ACCORDANCE WITH THE BWM CONVENTION AND GUIDELINES (G2)

1 INTRODUCTION

1.1 The purpose of this guidance is to provide general recommendations on methodologies and approaches to sampling and analysis to test for compliance with the standards described in regulations D-1 and D-2 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention). This guidance is an updated version of the guidance contained in document BLG 16/WP.4, taking into account advances in research since the document was first drafted, and should be read in conjunction with the BWM Convention, the *Guidelines for port State control under the BWM Convention* (resolution MEPC.259(67)) and the *Guidelines for ballast water sampling (G2)* (resolution MEPC.173(58)). Furthermore, and as instructed by MEPC 64, the sampling and analysis procedures to be used for enforcement of the BWM Convention should result in no more stringent requirements than what is required for Type Approval of ballast water management systems (BWMS).

1.2 This guidance consists of two parts,

.1 a discussion of the principles of sampling, accompanied by a list of recommended methods and approaches for analysis and sampling protocols available for compliance testing to the D-1 and D-2 standards in section 5; and

.2 background information on sampling and analysis methodologies and approaches, set out in the annex.

1.3 Sampling and analysis for compliance testing is a complex issue. According to the *Guidelines for ballast water sampling (G2)*, testing for compliance can be performed in two steps. As a first step, prior to a detailed analysis for compliance, an indicative analysis of ballast water discharge may be undertaken to establish whether a ship is potentially in compliance with the Convention.

1.4 When testing for compliance, the sampling protocol used should result in a representative sample of the whole discharge of the ballast water from any single tank or any combination of tanks being discharged.

2 DEFINITIONS

For the purpose of this guidance, the definitions in the BWM Convention apply and:

.1 A *sample* means a relatively small quantity intended to show what the larger volume of interest is like.

.2 *Representative sampling* reflects the relative concentrations and composition of the populations (organisms and/or chemicals) in the volume of interest. Samples should be taken in accordance with the annex, part 1 and/or part 2 of the *Guidelines on ballast water sampling (G2)*.

.3 *Analysis* means the process of measuring and determining the concentrations and composition of the populations of interest (organisms and/or chemicals) within the sample.

.4 An *indicative analysis* means a compliance test that is a relatively quick indirect or direct measurement of a representative sample of the ballast water volume of interest:

.1 an indirect, indicative analysis may include measurements whose parameters do not provide a value directly comparable to the D-2 standard, including biological, chemical, or physical parameters (e.g. dissolved oxygen levels, residual chlorine levels, Adenosine triphosphate (ATP), nucleic acid, *chlorophyll a*, and that by variable fluorescence, etc. The practicalities, applicability and limitations of these methods should be understood before they are used in compliance testing;

.2 a direct measurement, which is directly comparable to the D-2 standard (i.e. the determination of the number of viable organisms per volume) may also be indicative if it has:

.1 a large confidence interval, or

.2 high-detection limits; and

.3 an indicative analysis is an analysis performed in accordance with sections 4.1 and 4.2.

.5 A *detailed analysis* means a compliance test that is likely to be more complex than indicative analysis and is a direct measurement of a representative sample used to determine the viable organism concentration of a ballast water volume of interest. The result of such measurement:

.1 should provide a direct measurement of viable organism concentration in the ballast

water discharge which is directly comparable to the D-2 standard (number of viable organisms per volume);

.2 should be of sufficient quality and quantity to provide a precise measurement of organism concentration (+/- [X] organisms per volume) for the size category(ies) in the D-2 standard being tested for; and

.3 should use a measurement method with an adequate detection limit for the purpose for which it is being applied.

A detailed analysis is an analysis performed in accordance with the methods and approaches in sections 4.3 and 4.4. Detailed analysis should usually be undertaken on a sample taken in accordance with the procedures in section 4.4.

.6 *Testing for compliance* using indicative analysis and detailed analysis can employ a range of general approaches or standard methods. These approaches or methods are divided into those that sample a small proportion of the volume of interest to indicate or confirm compliance or a larger proportion of the volume of interest that can be utilized to indicate and confirm compliance. Those that provide a wide confidence interval should not be used to confirm compliance unless the result and confidence limit are demonstrably over the D-2 standard as measured directly or indirectly. Approaches/Standards are highlighted in sections 4.1, 4.2 and 4.4 for indicative analysis and sections 4.3 and 4.4 for detailed analysis.

.7 *Method* means a detailed step-by-step analysis procedure (for indicative or detailed analysis) or sampling methodology, which the laboratory or organization undertaking the work can follow, be audited against and be accredited to.

.8 *Approach* means a detailed step-by-step analysis procedure (for indicative or detailed analysis) or sampling methodology, which the laboratory or organization undertaking the work can follow. These procedures will not have been validated by an international or national standards organization.

.9 *General approach* means a conceptual description or broad methodology of sample collection or analysis.

.10 *The precision* of a measurement system is the degree to which repeated measurements under unchanged conditions show the same results.

.11 *The detection limit* is the lowest concentration level that can be determined to be statistically different from a blank sample within a stated confidence interval. Limits of detection are method and analysis specific.

.12 *Plankton* means *phytoplankton* (e.g. diatoms or dinoflagellates) and *zooplankton* (e.g. bivalve larvae or copepods) that live in the water column and are incapable of swimming against a current.

.13 *Confidence interval* means a statistical measure of the number of times out of 100 that test results can be expected to be within a specified range. For example, a confidence level of 95% means that the result of an action will probably meet expectations 95% of the time.

.14 *Operational indicator* means a parameter used to monitor and control the operation of the BWMS as defined during testing for Type Approval, e.g. limit values of physical or chemical parameters such as flow rates, dose, etc.

.15 *Performance indicator* means a biological parameter (e.g. ATP, *chlorophyll a*, direct counts) used to estimate or measure the performance of the BWMS in achieving the D-2 standard.

3 PRINCIPLES FOR SAMPLING AND ANALYSIS FOR BALLAST WATER DISCHARGES

3.1 All samples and analysis carried out to determine whether a ship is in compliance with the BWM Convention should be performed under reliable and verified QA/QC procedures (note that any method, approach or sampling procedure should be rigorously validated and practicability should be assessed).

3.2 The first premise of any sampling and/or any analysis protocol is to identify the purpose of the protocol, i.e. to prove whether the discharge of a ship is meeting the D-1 standard or meeting the D-2 standard. There are many ways in which this can be done; however, they are limited by:

.1 the requirements of the methodologies available for sampling the ballast water discharge;

.2 the methods of analysis of samples being collected;

.3 the methods involved in statistically processing the results of these analyses;

.4 the specific operation of the ballast water management system (including when the treatment is applied during the ballast cycle and the type of treatment used); and

.5 the practicalities of sampling a very large volume of water and analysing it for very low concentrations of organisms.

3.3 Successful sampling and analysis is also based on identifying the viable biological population being sampled and its variability. If this population is homogenous, it is much easier to sample than one that is known to be heterogeneous. In the case of ballast water, the sample is drawn from a discharge with a population that can vary significantly. Consequently, the samples collected for indicative or detailed analysis should be representative samples.

3.4 Sampling a ballast water discharge is restricted even further when parts of the ballast water may have already been discharged. Very few inferences can be made on the quality of that ballast water already discharged based on sampling the remaining discharge as it happens. The challenge is to determine the volume of interest and how to sample it.

3.5 The qualitative difference between indicative analysis and detailed analysis often relies on the level of statistical confidence, which, in detailed analysis may be superior.

3.6 Indicative analysis (using operational or performance indicators) can be undertaken at any time throughout the discharge. In cases where indicative analysis identifies that a system is grossly exceeding the D-2 standard, it may be sufficient to establish non-compliance, however, the practicalities, application and limitations of the methodology being used for indicative analysis need to be understood fully.

3.7 Based on the discussion in paragraph 3.3, two different potential detailed sampling approaches can therefore be considered:

.1 sampling the entire discharge from a vessel during a port visit. During this approach:

.1 it will be impossible, by definition, for vessels to discharge prior to sampling;

.2 large numbers of samples are likely to be required over a long period of time;

.3 large sample volumes may be required over a long period of time; and

.4 sampling personnel would be required on the vessel over a significant period of time; and

.2 collecting a representative sample of the ballast water being discharged during some chosen period of time, e.g. one sample or a sequence of samples. During this approach:

.1 the sampling can be developed to fit the situation on board the vessel; and

.2 a representative sample of the discharge can be taken, and that volume can be selected in many ways, providing the opportunity for identifying and sampling specific volumes of the discharge if appropriate, e.g. choosing a percentage of the discharge or sampling duration.

3.8 The D-2 standard expresses a low concentration of organisms to identify in the analysis. The confidence in the result of any sampling and analysis depends on the error inherent in the sampling method and on the error inherent in the method used for analysing the sample. The cumulative error of both must be taken into account when evaluating the result.

3.9 The tables in sections 4.1, 4.2 and 4.3 set out the range of methodologies and approaches, currently identified for use to analyse ballast water discharges and how they relate to the specific sampling protocols in section 4.4. These methodologies and approaches are stand-alone techniques that need to be combined with specific sampling protocols. These protocols should recognize the limitations of each methodology, its inherent sampling requirements, and how it can fit into a comprehensive sampling protocol for compliance testing.

3.10 Although some methodologies and approaches used in type approval testing may also be applicable in compliance testing, the latter, especially indicative sampling, may also require other approaches.

Table 1

Definition and differences between indicative and detailed analysis for the D-2 standard

	Indicative analysis	**Detailed analysis**
Purpose	To provide a quick, rough estimate of the number of viable organisms	To provide a robust, direct measurement of the number of viable organisms
Sampling		
Volume	Small or large depending on specific analysis	Small or large depending on specific analysis
Representative sampling	Yes, representative of volume of interest	Yes, representative of volume of interest
Analysis method		
Analysis parameters	Operational (chemical, physical) and/or performance indicators (biological)	Direct counts (biological)
Time-consuming	Lower	Higher
Required skill	Lower	Higher
Accuracy of numeric organism counts	Poorer	Better
Confidence with respect to D-2	Lower	Higher

4 METHODOLOGIES FOR COMPLIANCE TESTING UNDER THE BWM CONVENTION

4.1 Table 2: Analysis methods that may provide an indication of compliance with the D-1 standard[1]

Indicator	General approach	Standard method	Notes	Level of confidence or detection limit and citation for validation studies
Salinity	Conductivity meter to monitor salinity.	No international standard for ballast water analysis at this time although standard methods for measuring salinity do exist.	External elements can affect the salinity.	To be determined.
Salinity	Refractometer to monitor salinity.	No international standard for ballast water analysis at this time although standard methods for measuring salinity do exist.	Temperature can affect the readings.	To be determined.
Types of organisms in discharge – oceanic, coastal, estuarine or fresh water	Visual identification.	No international standard for ballast water analysis at this time.	Expensive, time-consuming, needs extensively trained personnel; may produce false results if encysted organisms from previous ballasting operations hatch.	To be determined.
Turbidity	Portable turbidity sensors.	No international standard for ballast water analysis at this time.	Requires understanding of turbidity characteristics in relation to the distance from shore.	To be determined.
Dissolved Inorganic and Organic constituents (Nutrients, metals coloured dissolved organic matter (CDOM))	Portable nutrient sensors.	No international standard for ballast water analysis at this time.	Requires understanding of inorganic or organic constituent characteristics in relation to the distance from shore.	To be determined.

[1] Additional information can be found in document BLG 16/4.

4.2 Table 3: Indicative analysis methods for use when testing for potential compliance with the D-2 standard[2]

Indicator	General approach	Standard method	Notes	Level of confidence or detection limit and citation for validation studies
Viable organisms ≥ 50 µm	Visual counts or stereo-microscopy.	No international standard for ballast water analysis at this time.	Can be expensive and time-consuming, needs moderately trained personnel. (Note that OECD Test Guideline for Testing of Chemicals 202, "*Daphnia* sp. Acute immobilization test and reproduction test" could be used as basis for standard methodology.)	To be determined.
Viable organisms ≥ 50 µm	Visual inspection.	No international standard for ballast water analysis at this time.	Visual inspection is likely to only register organisms bigger than 1,000 micro-metres in minimum dimension.	To be determined.
Viable organisms ≥ 10 µm and < 50 µm	Variable fluorometry.	No international standard for ballast water analysis at this time.	Only monitors photosynthetic phytoplankton and thus may significantly underestimate other planktonic organisms in this size fraction.	To be determined.
Viable organisms ≥ 50 µm and ≥ 10 µm and < 50 µm	Photometry, nucleic acid, ATP, bulk fluorescein diacetate (FDA), *chlorophyll a*.	No international standard for ballast water analysis at this time.	Semi-quantitative results can be obtained. However, some of these organic compounds can survive for various lengths of time in aqueous solution outside the cell, potentially leading to false positives. Welschmeyer and Maurer (2012).	To be determined.
Viable organisms ≥ 50 µm and ≥ 10 µm and < 50 µm	Flow cytometry.	No international standard for ballast water analysis at this time.	Very expensive.	To be determined.
Enterococci	Fluorometric diagnostic kit.	No international standard for ballast water analysis at this time.	Minimum incubation time 6 h. Semi-quantitative results from portable methods (see paragraph 2.2.2 of annex 1).	To be determined.
Escherichia coli	Fluorometric diagnostic kit.	No international standard for ballast water analysis at this time.	Minimum incubation time 6 h. Semi-quantitative results from portable methods (see paragraph 2.2.2 of annex 1).	To be determined.
Vibrio cholerae (O1 and O139)	Test kits.	No international standard for ballast water analysis at this time.	Relatively rapid indicative test methods are available.	To be determined.
Viable organisms ≥ 50 µm and ≥ 10 µm and < 50 µm	Pulse counting fluorescein diacetate (FDA).	No international standard for ballast water analysis at this time.	Sampling kit can be larger than that for bulk fluorescein diacetate (FDA).	To be determined.

[2] Additional information can be found in document BLG 15/5/4.

4.3 Table 4: Detailed analysis methods for use when testing for compliance with the D-2 standard

Indicator	General approach	Standard method	IMO citation	Notes	Level of confidence or detection limit and citation for validation studies
Viable organisms ≥ 50 µm and ≥ 10 µm and < 50 µm	Visual counts or stereo-microscopy examination. May be used with vital stains in conjunction with fluorescence + movement.	No international standard for ballast water analysis at this time, but see US EPA ETV Protocol, v. 5.1	BLG 15/5/5 and BLG 15/5/6 BLG 15/INF.6	Can be expensive and time-consuming, needs trained personnel. (Note that OECD Test Guideline for Testing of Chemicals 202, "*Daphnia* sp. Acute immobilization test and reproduction test" could be used as basis for standard methodology.)	To be determined.
Viable organisms ≥ 10 µm and < 50 µm	Visual counts with use of vital stains.	No international standard for ballast water analysis at this time, but see US EPA ETV Protocol, v. 5.1	BLG 15/5/10 (method) BLG 15/5/5 and BLG 15/5/6 (approach) MEPC 58 /INF.10	Requires specific knowledge to operate them. It should be noted that there may be limitations using vital stains with certain technologies.	To be determined. Steinberg et al., 2011
Viable organisms ≥ 10 µm and < 50 µm	Flow cytometers (based on *chlorophyll a* and vital stains).	No international standard for ballast water analysis at this time.	BLG 15/5/5 and BLG 15/5/6	Expensive and require specific knowledge to operate them. It should be noted that there may be limitation using vital stains with certain technologies.	To be determined
Viable organisms ≥ 50 µm and Viable organisms ≥ 10 µm and < 50 µm	Flow cameras (based on *chlorophyll a* and vital stains).	No international standard for ballast water analysis at this time.	BLG 15/5/5 and BLG 15/5/6	Expensive and require specific knowledge to operate them. It should be noted that there may be limitations using vital stains with certain ballast water management systems.	To be determined

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Indicator	General approach	Standard method	IMO citation	Notes	Level of confidence or detection limit and citation for validation studies
Viable organisms ≥ 50 µm and Viable organisms ≥ 10 µm and < 50 µm	Culture methods for recovery, regrowth and maturation.	No international standard for ballast water analysis at this time.	BLG 15/5/5 and BLG 15/5/6	Require specific knowledge to conduct them. Densities are expressed as Most Probable Numbers (the MPN method). Most species do not manage to grow using this method therefore cannot be used alone. 2-3 weeks incubation time needed.	To be determined
Enterococci	Culture methods.	ISO 7899-1 or ISO 7899-2	BLG 15/5/5 and BLG 15/5/6	Requires specific knowledge to conduct them. At least 44-h incubation time. EPA Standard Method 9230	To be determined.
Escherichia coli	Culture methods.	ISO 9308-3 or ISO 9308-1	BLG 15/5/5 and BLG 15/5/6	Requires specific knowledge to conduct them. At least 24-h incubation time. EPA Standard Method 9213D	To be determined.
Vibrio cholerae (O1 and O139)	Culture and molecular biological or fluorescence methods.	ISO/TS 21872-1/13/	BLG 15/5/5 and BLG 15/5/6	Requires specific knowledge to conduct them. 24-48 h incubation time. US EPA ETV Fykse et al., 2012 (semi-quantitative pass/fail-test) Samples should only be cultured in a specialized laboratory.	To be determined.
Enterococci, *Escherichia coli, Vibrio cholerae (O1 and O139)*	Culture with 11holera11ence-in-situ hybridization (FISH)	No international standard for ballast water analysis at this time.		Requires specific knowledge to conduct them. Quantitative and qualitative results after 8 h. Samples should only be cultured in a specialized laboratory.	To be determined.

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Indicator	General approach	Standard method	IMO citation	Notes	Level of confidence or detection limit and citation for validation studies
Viable organisms ≥ 50 µm and viable organisms ≥ 10 µm and < 50 µm	Visual counts using stereo-microscopy examination and flow cytometry.	No international Standard for ballast water analysis at this time.	BLG 17/INF.15	A Sampling Protocol that identifies whether a system is broken or not working and producing a discharge that is significantly above the D-2 standard. Designed to detect gross non-compliance with 99.9% confidence. Needs to be Validated.	To be determined.

4.4 Table 5: General approaches for sampling use when testing for compliance with the BWM Convention

General approaches for sampling	Discharge line or BW tank	Citation for validation study or use	Sample error and detection limit	Relative sample error amongst approaches
Filter skid + isokinetic sampling	Discharge line	Drake et al., 201First et al., 2012 (land-based testing); shipboard validation underway, Prototype 01, SGS	To be determined	Lower
Cylinder containing plankton net + isokinetic sampling	Discharge line	MEPC 57/INF.17	To be determined	Lower
Sampling tub containing plankton net + isokinetic sampling	Discharge line	Gollasch, 2006 and Gollasch et al., 2007 Cangelosi et al., 2011	To be determined	Lower
Continuous drip sampler + isokinetic sampling	Discharge line	Gollasch and David, 2010, 2013	To be determined	Lower
Grab sample	BW tank	David and Perkovic, 2004; David et al. 2007, BLG14/ INF.6	To be determined	Higher

4.5 **Table 6: Sampling and analysis methods/approaches for use when testing compliance with the BWM Convention. A checkmark indicates an appropriate combination of sampling and analysis.**

Analysis type size class or indicator microbe analysis method/approach	Filter skid + isokinetic sampling[3]	Plankton net + isokinetic sampling	Continuous drip sampler + isokinetic sampling	Grab sample
Indicative Analysis ≥ 50 µm Visual inspection Stereomicroscopy counts Flow cytometry Nucleic acid ATP *Chlorophyll a,* Bulk *FDA*	✓	✓		
Indicative Analysis < 50 µm and ≥ 10 µm variable fluorometry Flow cytometry Nucleic acid ATP *Chlorophyll a,* bulkBulk *FDA*			✓	✓
Indicative Analysis Enterococci, *E. coli* Fluorometric diagnostics			✓	✓
Indicative Analysis *Vibrio 14holera* Test kits Culture methods + microscopy			✓	✓
Detailed Analysis ≥ 50 µm Stereomicroscopy counts Flow cytometry/Flow camera	✓	✓		
Detailed Analysis < 50 µm and ≥ 10 µm Visual counts + vital stain(s) Flow cytometry/Flow camera Culture methods			✓	
Detailed Analysis Enterococci, *E. coli* Culture methods FISH with pre-cultivation			✓	
Detailed Analysis *Vibrio 14holera* Culture methods FISH with pre-cultivation			✓	

[3] Methods other than using an isokinetic approach as defined in Guidelines (G2) for acquiring a representative sample may be used in certain circumstances. Such methods should be validated prior to use.

4.6 References

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ANNEX 2

TECHNICAL DISCUSSION FOR THE GUIDANCE TO BALLAST WATER SAMPLING AND ANALYSIS IN ACCORDANCE WITH THE BWM CONVENTION AND GUIDELINES (G2)

1 INTRODUCTION

1.1 The purpose of this annex is to provide background information on:

.1 the development and use of methodologies for both indicative and detailed analysis and appropriate sampling; and

.2 analysis of the sample at an accredited laboratory.

1.2 This annex highlights the advantages, disadvantages and limitations of many different measures. Although recommendations are given in this document on what methodologies may be used, there are distinct benefits in using certain technologies at certain times. This should not stop the use of any of the methodologies, as long as the limitations are taken into account.

1.3 Any methods for analysis used for assessing compliance with the BWM Convention should be carefully validated under a range of operating conditions.

2 INDICATIVE ANALYSIS: METHODOLOGY AND APPROACHES

2.1 The D-1 standard

2.1.1 The D-1 standard requires the vessel to exchange its ballast water 200 nm from the coastline in waters 200 m deep, or if this cannot be achieved for safety reasons, 50 nm from the coastline in waters of the same depth. Therefore, the water in exchanged ballast water should have a similar salinity to that of mid-ocean water.

2.1.2 Indicative analysis for the D-1 standard of the BWM Convention could rely on the chemical parameters (e.g. salinity) of the water in the ballast water discharge, or on an estimate of species present. However, the latter might need trained personnel. If the ballast water discharge being tested has a salinity significantly less than that of 30 PSU, then it is likely that the ballast water has not been exchanged en route under the conditions required in the D-1 standard, or that the exchange has not been completed successfully.

2.1.3 Two exceptions to this are:

.1 when ballast water is taken up in port areas that are located in high-salinity environments, above 30 PSU. In such a case ballast water with a PSU of 30 may not originate from mid-ocean waters and therefore the ship may not be compliant with the D-1 standard; or

.2 when ballast water has been exchanged in designated ballast water exchange areas within 50 nm from the coastline in waters that may be of less salinity than the mid-ocean water. In this case the ballast water exchange would be compliant.

Therefore, the origin of the last ballast water exchange should be known before interpreting the results of salinity analysis.

2.1.4 Checking salinity could be backed up by further analysis of the organisms in the ballast water discharge to determine the origin of the ballast water; however, this would take time and need experienced staff. This can be done in line with the visual analysis methodologies outlined in paragraph 2.4.3 below. However, it should be noted that there are many external factors that could affect the salinity and the organisms in the ballast water, such as wet sediments in the ballast tanks, the state of the tide in the port concerned during its uptake and the fact that exchange may not remove all coastal organisms.

2.1.5 There are many ways to quickly and easily monitor the salinity of water on the market, and generic salinity measures should be used for indicative analysis.

2.2 Bacteria levels in the D-2 standard

2.2.1 Bacterial levels could be tested by a wealth of available portable methods. However, as the D-2 standard for bacteria is measured in colony forming units (CFU), the systems utilized may have to include a specific incubation time of the samples, which for commercially available systems is never shorter than four hours. Therefore, the time it takes for incubation limits the use of such systems for indicative analysis.

2.2.2 Advances in fluorometric diagnostics have resulted in a methodology that identifies the presence or absence of bacteria in a sample of the ballast water discharge. This methodology is based upon the detection of enzymes produced by the target bacteria in unconcentrated fresh water or marine samples and presently easily portable test kits for E. coli and Enterococci are available. This method can identify low levels of bacteria in water samples in less than 10 minutes, but the results are only semi-quantitative, i.e. a low level reading equates to a low level of bacteria. However, although the presence of bacteria can be shown, whether or not these organisms are living (i.e. form colonies) cannot be proven with this method at the present time. These diagnostic methods could be used in indicative analysis if very large numbers of organisms are identified.

2.3 Organisms of less than 50 micrometres and greater than or equal to 10 micrometres in minimum dimension[4] in the D-2 standard

2.3.1 Methods to measure the organisms in this category of the D-2 standard can be divided into two categories as follows:

.1 the use of biological indicators for organisms:

.1 nucleic acid;

.2 adenosine triphosphate (ATP), a coenzyme used as the main energy storage and transfer molecule in the cells of all known organisms; and

.3 indicators for the presence of organisms, such as *chlorophyll a*;

.2 the use of direct counts of living organisms (coupling a means to determine viability and manual or automatic counting of individual organisms).

2.3.2 The presence of nucleic acid or ATP in a sample may be taken as an indication of life, but it should be noted that this nucleic acid or ATP could come from any living organism of any size within the sample. There are no definitive methods available to correlate the amount of nucleic acid or ATP with the amount, or viability of organisms in the sample and, therefore, the presence of these chemicals are limited as an indicative analysis methodology. However, zero measurements of these chemicals may indicate that no organisms are in the sample, i.e. the treatment process was successful and in the D-2 standard is being met. Additionally, if nested filters are used to isolate specific size groups, then ATP, which degrades relatively quickly, can provide an indication of the potential presence of a large concentration of organisms in one size class. If linked to thresholds of ATP concentrations, this can be used to indicate samples which are highly likely to be above the standard.

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[4] The "Minimum Dimension" means the minimum dimension of an organism based upon the dimensions of that organism's body, ignoring e.g. the size of spines, flagellae or antenna. The minimum dimension should therefore be the smallest part of the "body", i.e. the smallest dimension between main body surfaces of an individual when looked at from all perspectives. For spherical shaped organisms, the minimum dimension should be the spherical diameter. For colony forming species, the individual should be measured as it is the smallest unit able to reproduce that needs to be tested in viability tests. This should be considered whenever size is discussed in this document.

2.3.3 The same problems occur when using other bio-chemical indicators to monitor the number of organisms in this category. As many of the organisms in this size range are likely to be phytoplankton, an obvious step would be to measure the level of *chlorophyll a*, a photosynthetic pigment which is essential for photosynthesis in the sample. Zero concentrations may indicate that there is no phytoplankton in the sample and chlorophyll *a* may also be a good indicator as to whether a BWMS using an oxidizing process was working to design dosages, as it might be expected to bleach such pigments. However, caution has to be exercised as:

.1 *chlorophyll a* can persist in seawater outside of a cell, therefore, sampling should only be limited to the particulate phase. However, nucleic acid and ATP can exist in dead organisms, detrital material, senescent or dead cells, decomposing macroalgae, plant detritus from terrestrial ecosystems and other non-living particles, etc.;

.2 there may be zooplankton in the sample being analysed;

.3 no cell count can be directly measured from a *chlorophyll a* measurement, as many small cells may provide a similar signal strength to that of fewer bigger cells; and

.4 no size distinction can be made and the *chlorophyll a* could derive from phytoplankton in the larger size category of the D-2 standard.

As a consequence, direct concentration measurements of this chemical would be difficult to use in indicative analysis. A wealth of portable tools exists to document the *chlorophyll* a content in seawater.

2.3.4 One potential exception is the Pulse-Amplitude Modulated Fluorometer (PAM) which measures the *chlorophyll a* fluorescence in living cells by exciting *chlorophyll a* molecules and registering the subsequent fluorescent signal. Such a response is only available in living cells and it should be noted that this method only provides an indirect measurement of those phytoplankton that use *chlorophyll a* in the sample, in both size categories of the D-2 standard. Testing this methodology on ballast water discharges suggests that there is a correlation between the ratio of variable and maximum fluorescence and the number of phytoplankton in this size category. However, the relationship between fluorescence signals and mixed assemblages of phytoplankton from different locations needs to be validated.

2.3.5 For analysis of organisms above 10 microns in minimum dimension, a flow cytometer may also be used. A common element of these systems is that they automatically count objects, including organisms, per size class in a fluid. The more simplified systems cannot separate organisms from sediment and detritus, or living from dead organisms. More sophisticated systems can also assess organism viability for phytoplankton by using organism stains together with flow cytometry. The separation of living phytoplankton from detrital material and zooplankton is based on the presence of auto chlorophyll fluorescence of phytoplankton cells. It should be noted, however, that using *chlorophyll a* fluorescence as an indicator of living organisms may result in over counting, as the molecule can remain intact for a significant amount of time as has been proved in preparing fixed (dead) samples. The practicability to use such devices on board a ship should be carefully assessed before use. To make a stable stream to produce adequate size of water particles, the device should be set in perfectly horizontal. Also any vibration should be isolated for accurate measurement.

2.3.6 Systems using flow cytometry deliver automated results promptly and may be used to assess the number of living phytoplankton in a sample after treatment with a viability stain. However, readings provided by the flow cytometer should also be examined manually to verify the automated readings. Concerns have been raised by users that the viability of smaller algae may not always be categorized correctly in these systems, as the viability signal may be too low for detection. Other concerns include the efficiency of portable versions and the limited ability of some of them to monitor organisms greater than or equal to 50 micrometres in minimum dimension. Although these systems may become a major tool in the future, there are elements, such as the reliability of portable versions of the systems that limit their use at the present time, which is especially the case for organisms greater than or equal to 50 micrometres in minimum dimension. Also, it is not clear if

the time to analyse a sample is greater than can be allotted in compliance testing. These can be overcome by taking the sample off the ship and using a fixed or mobile system near to the ship or the port.

2.3.7 Visual inspection could be another method of indicative analysis that is a quick and simple way to justify the need for detailed analysis. Taking an appropriate sample, concentrating it if necessary, and visually inspecting it against the light may show living organisms in the sample, but it should be noted that without magnification a visual inspection is likely to result in only organisms greater than or equal to 1,000 micrometres in minimum dimension being detected, unless chains or clumps are formed by colony forming organisms or the density of organisms is sufficiently large to colour the water. An assessment of the viability in such an inspection is limited to complete body movements of the organisms as organ activity and antennae or flagella movements may not be seen. As samples from BWMS that are not compliant are likely to contain organism levels that are orders of magnitude above the D-2 performance standard, visual inspections could be used in indicative analysis. However, it is assumed that only organisms bigger than 1,000 micrometres in minimum dimension may be determined in such way, therefore, its use for this size category is limited.

2.3.8 Visual inspection can also be undertaken using a field stereomicroscope with a low magnification (e.g. x 10). However, this methodology may require concentration of the sample and may need analysis by a trained operator to detect viable organisms. It should also be noted that this methodology would be more efficient and practicable for organisms greater than or equal to 50 micrometres in minimum dimension.

2.4 Organisms greater than or equal to 50 micrometres in minimum dimension in the D-2 standard

2.4.1 Many of the methodologies for monitoring organisms less than 50 micrometres and greater than or equal to 10 micrometres in minimum dimension may also be valid for monitoring organism levels in this category. However, nucleic acid and ATP methodologies encounter the same problems as outlined in paragraphs 2.3.2 and 2.3.3; and monitoring *chlorophyll a* levels, through fluorometers or the PAM methodology described above, has limited value for this size category of the D-2 standard, as the majority of organisms in this category are likely to be zooplankton.

2.4.2 Visual inspections may significantly underestimate the number of organisms in this size category due to the issues described in paragraph 2.3.8. However, the method may be robust enough to determine whether the BWMS is working at orders of magnitude above the D-2 standard based on a simple extrapolation from the sample to the D-2 standard. Detailed analysis may be needed to confirm this, especially when levels near the D-2 standard are encountered.

2.4.3 Additionally, stereomicroscopy can also be used to identify viable organisms greater than or equal to 50 micrometres in minimum dimension. The sample should be concentrated appropriately. Viability assessment should be based on movements of intact organisms. This movement may be stimulated. In addition, organ activity should be observed and fully intact non-moving organisms which show organ activity should be counted as living. Stains might also be used to help in viability determination – though methods are still under development. The viable organism numbers should be recorded and the numbers extrapolated up to the total volume of water filtered.

2.4.4 If the results in paragraphs 2.4.2 and 2.4.3 show elevated levels of organisms, then this result will indicate that the D-2 standard is not being met.

2.4.5 Further research must be encouraged; innovative methods for assessing for D-2 compliance, preferably based on in situ, automatic sampling and analytical procedures, should facilitate the most uniform implementation of the BWM Convention.

2.5 Operational indicators

Other indirect parameters and indicators could be used to indicate whether a BWMS is meeting the D-2 standard. These include, but are not limited to, indicators from the electronic self-monitoring of the BWMS

and residual chemicals (or lack of) from the BWMS, such as dissolved oxygen levels, residual chlorine, etc.

3 DETAILED ANALYSIS METHODOLOGIES AND APPROACHES

Once detailed analysis has been instigated by the port State, they should be prepared to undertake full analysis of the sample at an appropriate laboratory.

3.2 Bacteria

3.2.1 There are already international standards in place to analyse for the bacteriological indicators contained within the D-2 standard.

3.2.2 For Enterococci, ISO 7899-1 or 7899-2; or Standard Method 9230 (in the United States) should be used, and ISO 9308-3, ISO 9308-1 or Standard Method 9213D (in the United States) are appropriate for Escherichia coli. The methods used should be quantitative and based on a 95-percentile statistical evaluation. The number of laboratory samples should be sufficient to define the mean and standard deviation of Log 10 bacterial enumerations.

3.2.3 For *Vibrio cholerae* ISO/TS 21872-1/13 is appropriate. 100 ml of ballast water should be filtered and incubated according to ISO/TS 21872-1. Analysis needs to be undertaken in a specialist laboratory.

3.3 Organisms of less than 50 micrometres and greater than or equal to 10 micrometres in minimum dimension

3.3.1 Many of the analysis methods used to ascertain the numbers of organisms within this category have already been discussed in section 2. However, section 2 focuses on indicative analysis, rather than the more detailed analysis. Therefore, the following sections examine these methodologies in more detail. Some of these methodologies discussed here also relate to organisms greater than or equal to 50 micrometres in minimum dimension.

3.3.2 Simple upright and inverted microscopes are very useful for the enumeration of morphologically healthy organisms and motile organisms, as well as for measuring the size of organisms. Using this technology needs some skill and experience to evaluate the health of the individual organisms in the sample. However, this technology and experience should be available globally.

3.3.3 Fluorescence generated from photosynthetic pigments can be used for more detailed analysis of the morphological health of organisms and for the evaluation of stained organisms and a microscope with fluorescence capabilities is needed. However, this methodology only identifies phytoplankton (both living and dead) in the sample and makes no size differentiation. Zooplankton should be analysed through the methods highlighted in section 3.4.

3.3.4 Fluorescein di-acetate (FDA), chloromethylfluorescein diacetate (CMFDA) and Calcein-AM vital stains have both been used to determine viability. When non-specific esterases (enzymes found in live cells) are present, they cleave the acetate groups from the stains, and the resultant fluorescein molecules fluoresce green when illuminated with a blue light from an epi-fluorescence microscope. This method works best with live samples. Microscopes with a fluorescence capability and operators with skills and experience of analysis should be available at universities and research laboratories worldwide. However, it should be noted that these stains do not always work on all species or at all salinities and further research to validate this approach may be needed to support the use of these stains for this type of analysis.

3.3.5 Flow cytometers are advanced technologies which can be used in a laboratory to determine size, and viability of organisms in ballast water when a reliable vital stain(s) is (are) used to indicate organism viability. Cytometer detected particles, including organisms, can be processed visually or by a computer to quantify viable organisms in that sample. These systems reduce manual labour, but require specific knowledge to operate them. High particle loads in ballast water may reduce the detection limits of these

methodologies and the volume of samples analysed. At present, portable versions of these technologies have not fully been proven for use on ballast water discharges, however, samples could be taken off the ship and analysed using a fixed or mobile system near to the ship or the port.

3.3.6 Regrowth experiments, in which the visual appearance of photosynthetic organisms in a sample is followed by a specific period in order to quantify the Most Probable Number (MPN), are methods to evaluate the number of organisms in a sample. However, these are slow and are work intensive. In addition, a major drawback of this methodology may be that specific growth factors during the incubation may not be fulfilled, giving a risk of bias. Regrowth and reproduction may be seasonably variable, giving different results at different times. Further, a viable organism may be in good health and reproducing rapidly, or in poor health, not reproducing until health has improved. Finally, this is likely to be time-consuming.

3.3.7 Bulk parameter measurements, such as photosynthetic activity, are also not suitable for detailed analysis (please see paragraphs 2.3.2 and 2.3.3), but can be used as supporting data for other methods used to determine the number of viable organisms in the ballast water samples.

3.3.8 Planktonic organisms may be fragile and samples may need to be concentrated further to aid the accurate quantification of organisms. There are many methods to achieve this, however, care has to be taken to reduce physical stress as this may result in reduced viability levels. A simple, rapid, flexible and cautious method for concentrating plankton cells is the use of transparent membrane filters. If the sample analysis is performed on board the sample can be filtered directly on to this membrane, which can subsequently be placed directly under a microscope for examination. The sample volume to be analysed would need to be adjusted depending on the cell density, however, live, vital stained and fixed organisms within this size category can be evaluated on these filters. If the representative analysis is performed at a laboratory, this process for concentration should be performed at the laboratory just before starting the staining process to avoid under-estimate of viable organisms. Importantly, the loss (if any) of organisms (i.e. those cells passing through the filter and recovered in the filtrate) would need to be determined. Alternatively, a filter mesh may be used to concentrate the sample and the concentrated organisms may, after filtration, be transferred into an observation chamber. Again, the loss of organisms through damage must be quantified.

3.4 Organisms greater than or equal to 50 micrometres in minimum dimension in the D-2 standard

3.4.1 Paragraphs 3.3.2 to 3.3.8 are also applicable to the analysis of organisms in this size category.

3.4.2 In addition, the following issues need to be considered when developing a methodology for analysing organism numbers in this size category:

.1 testing the sample for movement and response to different stimuli are simple techniques for the examination of viable/dead zooplankton under a stereomicroscope. The observation for organ activity, such as heartbeats, may also contribute to the viability assessment. The use of a filtering mesh (e.g. 50 microns in diagonal dimension) under the Petri dish of the stereomicroscope, or the addition of 50 micron micro beads to the sample, may help with size calculations and vital stains may also add value to these methodologies. Separate guidelines on this issue are being developed through the land-based facilities and the ETV protocol in the United States;

.2 methods using a combination of flow cytometry and microscopy have the disadvantage of high complexity, high price and small sample sizes, which means the ballast water samples would have to be concentrated further; and

.3 the storage condition and time before analysis is likely to be critical to reduce mortality in the sample.

3.4.3 It is therefore recommended that simple microscopic examination of organisms in this size category is used for compliance monitoring. The microscopic examination of organisms is a robust, simple and cheap methodology which can be completed in laboratories worldwide.

4 SOURCES OF ERROR

4.1 The ideal method for compliance monitoring is a procedure that:

.1 detects organisms in the ballast water discharge;

.2 has an appropriate limit of detection;

.3 is precise;

.4 is accurate;

.5 is economical;

.6 is quick;

.7 can be carried out with minimal technical expertise; and

.8 can be obtained in all parts of the world.

However, any result obtained would have to include confidence limits based on both the sampling error and analytical error.

4.2 Sources of error include, but are not limited to, errors arising within:

.1 sampling, including:

.1 sample loss (e.g. during filtration);

.2 incorrect use of equipment;

.3 day-to-day variations in the conditions in which the sampling is taking place; and

.4 the experience of the technicians;

.2 processing the sample, including:

.1 incorrect use of equipment;

.2 day-to-day variations in the conditions in which the sampling is taking place; and

.3 the experience [and fatigue] of the technicians;

.3 analysis of the sample:

.1 incorrect use of equipment;

.2 the experience [and fatigue] of the technicians;

.3 day-to-day variations in the conditions in which the sampling is taking place;

.4 the number of organisms counted. The distribution of organisms in a range of samples usually follows the Poisson distribution and higher numbers of samples give a lower relative variation and sample error;

.5 the inherent variation and errors arising from the methods used for analysis. This is especially so when the evaluation of organism numbers in a sample is based on manual counting methods due to human error. For example, although the definition of the minimum dimension of an organism in Guidelines (G2) is quite detailed, analytical results may be influenced by practical issues. These include situations when the size of an organism is determined on a two dimensional microscope, which cannot view the organism "from all perspectives"; and

.6 poor harmonization between laboratories and quality control within the laboratory. In the field of chemical analysis, inter-laboratory calibration occurs and is tested. Inter-laboratory calibration of biological samples is also common practice, but the difficulty in the compliance monitoring context is that the viability of the organisms needs to be documented and the viability may be impaired by the mode and duration of sample shipments to different laboratories. Therefore, laboratories should be well managed, and uncertainty limits (the analysis variation) should be calculated for each laboratory. This should be achieved in conjunction with ISO 17025, which provides a standard for the general requirements needed by laboratories to prove they are competent to carry out tests and/or calibrations, including sampling.

4.3 The variation arising from sampling should be added to that from analysis to determine the confidence limits within which the true value of the organism number lies. This has an important bearing on how the result can be used for enforcement of the BWM Convention.

4.4 The sampling uncertainty can be obtained by setting up a null–hypothesis, that is a general or default position that is expected in the results, e.g. the average concentration of organisms is equal to the D-2 standard at a selected level of significance and then the data would be analysed using one of the following tests:

Table 1: Statistical handling of the results

Distribution of the results	Test	Notes
Normal distribution	t-test	It is unlikely this test will be used, as it is not used with "rare" populations, i.e. the expected population of organisms in treated ballast water
A distribution that is not normal	Non-parametric Wilcoxon rank test	Not normal due to the small number of samples
Poisson distribution	Chi-square test	Used when the analytical results are treated as one sample (i.e. the numbers of organisms over the entire volume are very rare [low] and combined).

Ideally, an analysis of the distribution should be performed before the data are statistically evaluated.

4.5 There has been much discussion within IMO on whether the results of the analysis should be averaged to assess compliance or that every result should have to meet the D-2 standard. This is a unique debate at IMO due to the biological nature of the subject matter being analysed, and different States have significantly different views on this issue. Therefore, it will be very difficult to arrive at a conclusion as in the case of non-compliance the results of the analysis are likely to be used in the legal jurisdictions of each IMO Member State, and each of those States may require different evidence to support any enforcement action.

4.6 If the results of detailed analysis are to be averaged, then both the sample variation and the analysis variation need to be calculated and applied to the result. However, some analysis of the sample variation may be needed, as it may be unacceptably high. For example, for five treated ballast water samples, viable

organism number results of 9,9,9,9 and 9 will provide the same average as 0,0,0,0 and 45. Both systems would pass the D-2 standard, if averaged; however, the variation is considerably bigger for the second set of results and may prove to be unacceptable because of the one large value.

4.7 If each of the results is treated as an individual value that has to meet the D-2 standard, then again the confidence limits would have to be calculated from the sampling and analytical errors. Here if all results are less than the D-2 standard, then the sampling has proved that the BWMS is meeting the standard.

4.8 The basic difference between instantaneous and average approaches is that the results of the average approach describe the variations of the concentration of organisms during the deballasting event, whereas the results of the instantaneous approach describes the variation based on the assumptions of the Poisson distribution. However, the average approach, based on the results of a few samples, has the disadvantage that the variation may be too high, is unacceptable and needs to be improved, which could invalidate the evaluation and lead to inconclusive results.

4.9 The instantaneous approach has the disadvantage that variations in the organism levels at different times of the discharge are not taken into account, which should not be a problem if all the samples meet the D-2 standard. If the discharge is not always under the D-2 standard, the problem can be mitigated by using a flow-integrated sample over set periods of time, which, if taken properly, represents an average of the organisms in the treated ballast water over that time when presented with variance estimates and confidence intervals. This constitutes a better representation of the ballast water quality than separate samples. In addition, a lower variation should be obtained because a larger sample is being analysed. The average approach is likely to have the same disadvantages unless the samples are very large and collected over most of the discharge.

4.10 The differences between applying an instantaneous sampling regime or an average sampling regime to the result are less extreme when taking numerous flow-integrated samples. This is because for each discharge there will be a number of results arising from samples that have been averaged over a specific time.

5 DETAILED ANALYSIS: THE SAMPLE PROTOCOL

5.1 Sample protocols for discharges of treated ballast water through a distinct discharge point fall into two categories, the first based on specified and replicated volumes and the second based on flow integration over a specified time. The first entails taking a specific number of set volumes of the ballast water discharge, whilst the second takes a continuous sample over a set time period. The flow integration sampling protocol can be achieved by either continuously sub-sampling a small amount throughout the entire duration of the discharge, therefore, collecting one sample over time, or taking multiple sub-samples over a specific time scale (i.e. 5 minutes, 10 minutes or 15 minutes) repeatedly throughout the discharge, providing a result for each sub-sample.

5.2 However, for sampling protocols based on specified and replicated volumes, defining both the number of samples and their volume to ensure representativeness, takes time. As a representative sampling procedure is needed to ensure compliance with the BWM Convention, then the flow integration protocols based on set times should be implemented.

5.3 Using a sampling protocol that continuously sub-samples small amounts throughout the entire duration of the discharge, may significantly underestimate the amount of larger organisms (i.e. organisms greater than or equal to 50 micrometres in minimum dimension) in the sample due to damage to the organisms held in the cod-end of the filter. If such a system is used then a protocol for replacing the cod end needs to be developed.

5.4 The arrangements for detailed analysis should take into account the requirements of the methods and/or approaches they intend to use for detailed and/or indicative analysis. Special consideration should be given and contingencies arranged for sampling in remote ports, where it is likely to take time to mobilize samplers and sampling resources.

6 DETAILED METHODOLOGY

6.1 As described in paragraph 5.1, there are two distinct ballast water sampling protocols, one based on flow integration and one based on the use of specified and replicated volumes. As they both use filtration and concentration of the sample the following section can apply to both methods.

6.2 For in-line sampling, a sampling system should be set up which:

.1 collects organisms greater or equal to 50 μm;

.2 allows samples of the ballast water to be taken and filtered;

.3 enables the amount of ballast water sampled to be measured to allow for extrapolation of the results; and

.4 allows the filtered ballast water to be discharged safely without affecting the stability and safety of the ship, its crew and the samplers or other discharges from the vessel such as bilge water.

IMO BWM.2/Circ.40 of 8 October 2012

Issuance of Ballast Water Management Certificates prior to entry into force of the BWM Convention and Ballast Water Management Plans approved according to resolution A.868(20)

1. The Marine Environment Protection Committee, at its sixty-fourth session (1 to 5 October 2012), recalling the conclusions of MEPC 63, approved the dissemination of a circular on issuance of Ballast Water Management Certificates prior to entry into force of the BWM Convention (MEPC 64/23, paragraph 2.38.8).

2. Member Governments are invited to advise the Organization on the progress made after the conditions for entry into force of the BWM Convention have been met and prior to the actual entry into force of the Convention.

3. Flag States, port States and international organizations are invited to bring the annexed Guidance to the attention of all parties concerned.

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ANNEX

ISSUANCE OF BALLAST WATER MANAGEMENT CERTIFICATES PRIOR TO ENTRY INTO FORCE OF THE BWM CONVENTION AND BALLAST WATER MANAGEMENT PLANS APPROVED ACCORDING TO RESOLUTION A.868(20)

1 With regard to the issuance of International Ballast Water Management Certificates prior to entry into force of the BWM Convention, the Committee noted the concern that the Convention allows no phase-in period for ships constructed prior to the entry into force of the Convention to comply with its provisions. This would result in all ships of 400 gross tonnage and above to have on board an approved Ballast Water Management (BWM) Plan and be surveyed and certificated immediately on the entry into force of the Convention.

2 The Committee agreed that it would be impracticable, for those responsible, to prepare, review and approve BWM Plans and survey and certify all ships of 400 gross tonnage and above within the 12-month period between the date when the conditions for entry into force have been satisfied and the actual entry-into-force date of the Convention.

3 To address this impracticality, MEPC 63 endorsed the conclusion of the Ballast Water Review Group with regard to Contracting Governments to the BWM Convention issuing International Ballast Water Management Certificates prior to entry into force of the Convention, provided it is annotated to state that validity begins from the entry-into-force date, combined with a statement issued to the Company when the BWM Plan was received, thereby allowing the vessel to trade for three months with an unapproved BWM Plan on board.

4 Recognizing that regulation B-1 requires the Ballast Water Management Plan to only take into account guidelines developed by the Organization and does not mandate compliance with resolution MEPC.127(53) or resolution A.868(20), and that resolution MEPC.127(53) does not revoke resolution A.868(20), the Committee 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 the plan requires revision due to the installation of a ballast water management system.

IMO BWM.2/Circ.37 of 14 June 2012

Information that should be made available in proposals for approval of ballast water management systems in accordance with the Procedure for approval of ballast water management systems that make use of Active Substances (G9)

1. The Marine Environment Protection Committee, at its sixty-third session (27 February to 2 March 2012), concurred with the conclusion of the Ballast Water Review Group regarding the minimum information that should be available in proposals for approval of ballast water management systems in accordance with paragraph 8 of the Procedure for approval of ballast water management systems that make use of Active Substances (G9), as set out in the annex.

2. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

INFORMATION THAT SHOULD BE MADE AVAILABLE IN THE APPLICATIONS FOR APPROVAL IN ACCORDANCE WITH PARAGRAPH 8 OF THE PROCEDURE FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS THAT MAKE USE OF ACTIVE SUBSTANCES (G9) (THE NON-CONFIDENTIAL INFORMATION TO BE SUBMITTED TO MEPC)

This document specifies the minimum information that should be contained in an application for Basic or Final Approval in accordance with paragraph 8 of Procedure (G9). It is structured based on the "Methodology for information gathering and the conduct of work of the GESAMP-BWWG" contained in document BWM.2/Circ.13/Rev.1.

The information should be presented in a clear and succinct manner. Tables should be used wherever possible. If it is not possible to submit the relevant information in the proposal for approval due to page limits agreed for MEPC submissions, a separate information document should be used that is submitted at the same time.

1 INTRODUCTION

The terms, definitions and abbreviations used in this document are defined in the "Methodology for information gathering and the conduct of work of the GESAMP-BWWG", contained in document BWM.2/Circ.13/Rev.1.

2 GENERAL

Whenever literature data is used, full reference information should be provided.

3 APPLICATION DATA SET

3.2 Identification of the Active Substance or Preparation (Procedure (G9))

- Chemical identification and description of the chemical components even if generated on board.

- A proposal for approval should include a list of the name and relative quantities (in volumetric percentages) of the components.

3.2.1 Preparations

- Name, CAS-number (if applicable), list of components, and concentrations of all hazardous components.

3.2.2 Active Substances

- Name, CAS number, concentration (if applicable: intended minimum and maximum application concentration), purity and identification of impurities (by chemical name and CAS number).

3.2.3 Relevant Chemicals (Procedure (G9), paragraph 2.1.4)

- Results of the chemical analysis of the treated ballast water.
- Name, CAS number, and concentration.
- Provide reasoning why substances were or were not selected for further investigation during risk assessment.

Information on all analysed substances, even if the analytical results were below the detection limits, is desired here. All substances in the treated ballast water that were detected above the detection limit are regarded as Relevant Chemicals and should be evaluated.

Chemical analysis results should be accompanied by a specification of the applied Active Substance concentration, test conditions, characteristics of the test water (temperature (T), pH, salinity, TOC, DOC, TSS), sampling time, handling and storage of samples before analysis, and analytical method.

If chemical analyses were performed during more than one test run, the number of test runs should be stated and results should be reported either in the form of mean values ± standard deviation or minimum/maximum concentrations measured or individual measurements for each test run. Analytical results should be provided for both treated and control samples.

Reasoning should be provided, based on the documented state of knowledge, on which basis the selection of substances for inclusion in the chemical analysis was made, taking into account the chemical reactivity of the Active Substance and other components of the respective system. For instance, for chlorination systems, a minimal set of potentially relevant substances can be found in document MEPC 59/2/13. A more extensive list can be found in Annex II of the final report of the R&D-project "Proposal for a harmonized Emission Scenario Document on ballast water discharge" (MEPC 62/INF.19).

3.2.4 Other Chemicals

Information on all Other Chemicals (like cleaning agents, chemicals for neutralization, etc.) should be included here.

- Name, CAS number, concentration, and purpose.
- If required (e.g. in case of hazardous properties or qualification according to GHS) a human and an environmental risk assessment should be performed and a justification why such substances are not treated as Relevant Chemicals should be included.

3.3 Data on effects on aquatic plants, invertebrates and fish, and other biota, including sensitive and representative organisms (Procedure (G9), paragraph 4.2.1.1)

The tests for Active Substances, Preparations, Relevant Chemicals and Other Chemicals should be carried out in accordance with internationally recognized guidelines (preferably Organization for Economic Co-operation and Development (OECD) Guidelines for Testing of Chemicals, USA, and other EPA guidelines or other equivalent tests).

3.3.2 Acute aquatic toxicity

- Data (LC50/EC50) for all Active Substances, Relevant Chemicals, Other Chemicals for three different trophic levels for the aquatic compartment (algae, fish, crustaceans), preferably including data on two additional marine taxonomic groups (e.g. echinoderms, molluscs).
- Data should be presented and discussed either on the basis of toxicological tests or existing toxicological knowledge for each end point listed.

3.3.3 Chronic aquatic toxicity

- Data (EC10, NOEC) for all Active Substances, Relevant Chemicals, Other Chemicals for three different trophic levels for the aquatic compartment (algae, fish, crustaceans).
- Data should be presented and discussed either on the basis of toxicological tests or existing toxicological knowledge for each end point listed.

3.3.4 Endocrine disruption

It should be evaluated if any of the substances is an endocrine disrupting chemical using studies or, if none are available, literature data.

3.3.5 Sediment toxicity

To be able to evaluate risk to the sediment data on the partition, coefficient Koc is needed. This is also important for the MAMPEC calculations. If the Koc values are high (trigger: 500 L/kg), it would be desirable to assess sediment toxicity tests or, if these are not available, assess the toxicity using established national or international methods such as the equilibrium partitioning method (EPM) according to the "Technical Guidance Document on Risk Assessment" (TGD) to the European Biocides Directive (Directive 98/83/EC). An evaluation of the PNECsediment should be included if data indicate the risk of sediment toxicity.

3.3.6 Food web/population effects

The results of section 3.3.6 should be discussed referring to the effects of the substances on the food web here.

3.4 Data on mammalian toxicity (Procedure (G9), paragraph 4.2.1.2)

3.4.1 General

- For proprietary experimental data the applied test method should be specified.
- For each toxicological endpoint, the quality of the available data and the implications of the results should be briefly discussed.

3.4.2 Acute toxicity

- Lethal or limit dose information, exposure route, species.

3.4.3 Effects on skin and eye

- Application form/concentration tested, severity and reversibility of effect, species or in vitro model.
- If tests have not been carried out on account of extreme pH or known or suspected corrosive properties this should be clearly stated and supporting information provided.

3.4.4 Repeated-dose toxicity

- NOAEL or LOAEL, dose range tested, most sensitive effect observed (target organ), test duration, exposure route, species, and sex.

3.4.5 Chronic toxicity

- NOAEL or LOAEL, dose range tested, most sensitive effect observed (target organ), test duration, exposure route, species, and sex.

3.4.6 Developmental and reproductive toxicity

- NOAEL or LOAEL for systemic parental toxicity, effects on reproduction, and developmental effects, dose range tested, most sensitive effect observed, test duration, exposure route, and species.

3.4.7 Carcinogenicity

- NOAEL or LOAEL for tumour and non-tumour effects, dose range tested, most sensitive effect observed, test duration, exposure route, species, and sex.

- If available carcinogenicity classifications are cited, a full verbal description of the relevant classification should be provided as well as the year of the last assessment. It is not appropriate to cite carcinogenicity classifications that have been outdated by more recent relevant experimental data.

3.4.8 Mutagenicity/Genotoxicity

- Experimental model, dose range tested.

3.4.9 Toxicokinetics

3.5 Data on environmental fate and effect under aerobic and anaerobic conditions (Procedure (G9), paragraph 4.2.1.3)

3.5.2 Modes of degradation (biotic; abiotic)

Information on the specific degradation rates (biotic and abiotic) at different salinities and temperatures is desirable for the evaluation of the persistence of all substances and can be used for the MAMPEC calculations. Potential environmental, health and safety consequences of observed degradation rates should be discussed as appropriate.

3.5.3 Persistence and identification of the main metabolites in the relevant media (ballast water, marine and fresh waters)

The results from section 3.5.2 should be discussed here regarding the classification as persistent (PBT-approach) substances. Relevant metabolites should be identified and it should be discussed whether they possess hazardous properties according to the PBT assessment.

3.5.4 Bioaccumulation, partition coefficient, octanol/water partition Coefficient

To be able to evaluate the MAMPEC calculations the octanol-water partition coefficient Kow is needed. The bioaccumulation already is discussed under 3.3.6 and 3.3.7.

3.5.5 Bioavailability/biomagnification/bioconcentration

For the evaluation of the potential for bioaccumulation, the log Kow and/or the bioconcentration factors (BCF) data is needed. Calculation of the Kow according to acknowledged standards, e.g. ACD is acceptable.

A substance is regarded as (potentially) bioaccumulative if the log Kow is >3 and BCF>2000. If the log Kow is above 3, testing of the bioaccumulation potential should be considered. The BCF, for example, could be calculated with the *formulae* 74 and 75 of the TGD (see 3.3.5) using the log Kow. Other established methods for deriving the BCF may be used. Where tests are not applicable, or if log Kow <3, BCF values may be estimated using (Quantitative) Structure-Activity Relationship ((Q)SAR) models.

3.5.6 Reaction with organic matter

If there are reactions with organic matter these should be discussed. It should be described to what extent this issue was investigated, experimentally or by analysis of available literature data.

3.5.7 Potential physical effects on wildlife and benthic habitats

If there are effects on wildlife and benthic habitats, these should be discussed.

3.5.8 Potential residues in seafood

If there are potential residues in seafood, these should be discussed taking into account the PBT and mammalian toxicity properties of the substances.

3.5.9 Any known interactive effects

It should be described to what extent this issue was investigated, experimentally or by analysis of available literature data. If there are identified or suspected interactive effects, these should be discussed.

3.6 Physical and chemical properties for the Active Substances and Preparations and treated ballast water, if applicable (Procedure (G9), paragraph 4.2.1.4)

3.6.1 To be able to evaluate the fate and behaviour in the environment, a basic data set on the physico-chemical properties of all substances is needed.

3.6.2 Melting point.

3.6.3 Boiling point.

3.6.4 Flammability (flash point).

3.6.5 Density (relative density).

3.6.6 Vapour pressure, vapour density – The Henry's constant in [Pa*m^3/mol] at 20°C and the vapour pressure in [Pa] at 20°C is needed to be able to evaluate the MAMPEC calculations.

3.6.7 Water solubility/dissociation constant – The solubility in [g/m^3] at 20°C is needed to be able to evaluate the MAMPEC calculations.

3.6.8 Oxidation/reduction potential.

3.6.9 Corrosivity to the materials or equipment of normal ship construction.

3.6.10 Auto-ignition temperature.

3.6.11 Explosive properties.

3.6.12 Oxidizing properties.

3.6.13 Surface tension.

3.6.14 Viscosity.

3.6.15 Thermal stability and identity of relevant breakdown products.

3.6.16 Reactivity towards container material.

3.6.17 pH – Since the pH of test waters can influence the formation of disinfection by-products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of the pH of untreated and treated ballast water.

3.6.18 Salinity – Since the salinity of test waters can influence the formation of disinfection by-products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of the salinity of untreated and treated ballast water. If water of different sources was mixed or any additives were added to natural test water to achieve the given salinity, this should be specified.

3.6.19 TOC, DOC, % particulate matter – Since the organic carbon and particulate matter content of test waters can influence the formation of disinfection by-products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of TOC, DOC, and total suspended solids (TSS) of untreated and treated ballast water. If any additives were added to natural test water to achieve the given concentrations, these should be specified.

3.6.20 Other known relevant physical or chemical hazards.

3.7 Analytical methods at environmentally relevant concentrations (Procedure (G9), paragraph 4.2.1.5)

3.7.1 All chemical analysis results should be accompanied by a specification of the applied analytical method, its detection and quantification limits and known potential interferences.

4 USE OF ACTIVE SUBSTANCE OR PREPARATION

4.1 The manner of application

All of the following information is deemed to be relevant for environmental and/or human health protection and should be included in the non-confidential dossier:

- manner of application of the Active Substance or the Preparation, including required dosage and retention time;
- recommended methods and precautions concerning safe handling, use, storage, and transport;
- procedure to be followed in case of fire, and the nature of reaction products, combustion gases, etc.;
- emergency measures in case of an accident;
- an indication of the possibility of destruction or decontamination following release in the marine environment;
- procedures of waste management of the Active Substance;
- the possibility of reuse or recycling;
- the possibility of neutralization;

- conditions for controlled discharge;
- the amount of substance on board ship;
- appropriate risk management measures; and
- an evaluation of proposed risk management measures in respect to the hazards to ship, personnel and the environment.

5 MATERIAL SAFETY DATA SHEETS (Procedure (G9), paragraph 4.2.7)

The classification under GHS should be given for all Active Substances, components of a Preparation, Relevant Chemicals and other by-products. Where a substance is not classified as hazardous under GHS, this should be indicated.

6 RISK CHARACTERIZATION

6.1 Screening for persistence, bioaccumulation and toxicity (Procedure (G9), paragraph 5.1)

This section should include a comparison between the PBT properties of the substances that were already discussed in the sections 3.3.2 (acute toxicity), 3.3.3 (chronic toxicity), 3.5.3 (bioaccumulation) and 3.5.4 (persistence) and the PBT criteria. Again an orientation could be the TGD (section 4.4.2, paragraph 3.5.5). The conclusions from the PBT assessment should be given.

6.2 Evaluation of the treated ballast water (Procedure (G9), paragraph 5.2)

The test conditions should be described in detail (organisms tested, salinities, duration of the test, temperature, organism density, sediment load, etc.). A presentation of the results in tables is desirable. The results should be discussed. In a first step, a conservative approach with no dilution should be discussed; in a second step realistic dilution scenarios (dilution factor according to the GESAMP-BWWG Methodology) should be used. The rationale for taking a conservative approach is that there could be multiple discharges into one location (even though this is not necessarily the case).

The test results to be provided should include all endpoints as appropriate based on the experimental design, e.g. acute 24-hour, 48-hour, 72-hour, and 96-hour Lethal Concentration at which x% of the test organisms die (LCx), No Observed Adverse Effect Concentrations (NOAECs), chronic No Observed Effect Concentration (NOEC) and/or Effect Concentration at which x% of test organisms show effect (ECx).

6.2.3 Determination of holding time

Based on the efficacy, the decay rates and the ecotoxicity tests with treated ballast water the holding time should be determined. It is important to note the range of water temperatures, salinity and other relevant variables at which this holding time is valid.

6.3 Risk characterization and analysis

6.3.1 Prediction of discharge and environmental concentrations

The Predicted Environmental Concentrations (PEC) should be predicted for all substances relevant for the risk assessment preferably using the latest MAMPEC model. The input parameters for the substance properties, the environment and the emission should be stated here. To be able to recalculate the MAMPEC results, screenshots of the input screens are helpful. If no information on the degradation rates is available, no degradation should be assumed in MAMPEC. It should be declared if that was the case. To be able to calculate the PEC/PNEC ratios, the environmental concentrations (maximum concentration) for all substances relevant for the risk assessment should be noted in this section.

6.3.2 Effects assessment

A short summary of the data for ecotoxicity should be provided.

6.3.3 Effects on aquatic organisms

Predicted No Effect Concentrations (PNEC) should be derived using the appropriate assessment factors (AF) according to TGD (section 3.3.1.1). The chosen AFs should be discussed. A tabular overview on the data is desirable.

6.3.4 Comparison of effect assessment with discharge toxicity

A short discussion is eligible whether the discharge toxicity shows any unexpected effects that cannot be explained by the toxicity data of the single substances.

7 RISK ASSESSMENT

7.1 Risk to safety of ship

For corrosion testing, an overview of the evaluation and results should be included and the test duration and the materials and concentrations tested should be clearly stated.

For all potential risks to ship/crew including:

- increased corrosion;
- fire and explosion;
- storage and handling of the substances;
- contact with, or inhalation of, process products; and
- noise.

Minimum relevant information should include the identification and discussion of risks or justification as to why there is no risk.

7.2 Risks to human health

The basic approach followed should be outlined. If specific guidelines were applied, these should be identified. Identified hazards (according to sections 3.2 and 3.4) should be specified.

7.2.2 Health effects in humans

Potential health effects arising from each identified hazard (according to sections 3.2 and 3.4) should be discussed and quantified. Particular attention should be given to the possibility of interactions and/or cumulative effects.

7.2.3 Human exposure scenario

It should be clearly stated which unit operations can be identified for the operation of the BWMS, regardless of their exposure potential. For each unit operation a brief appraisal of the potential of human exposure should be given. Where human exposure cannot be excluded, the exposure scenario should be described in detail and the quantitative exposure estimation should be given for each relevant substance, population group and exposure route, accompanied by information on the input parameters used.

The applied approach for risk characterization should be described and the calculated level of risk should be stated. Envisaged risk reduction measures should be listed together with an evaluation of their effectiveness.

7.3 Risks to the aquatic environment

The calculated PNEC values should be compared with the PECs derived from MAMPEC. A PEC/PNEC ratio greater than 1 indicates a risk for the environment. Appropriate risk mitigation measures should be proposed.

8 ASSESSMENT REPORT (Procedure (G9), paragraph 4.3)

IMO BWM.2/Circ.33 of 8 August 2011

Guidance on scaling of ballast water management systems

1. The Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), approved the Guidance on scaling of ballast water management systems developed by the Sub-Committee on Bulk Liquids and Gases (BLG) at its fifteenth session (7 to 11 February 2011), as set out in the annex.

2. Member Governments and international organizations are invited to bring the annexed Guidance to the attention of all parties concerned.

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ANNEX

GUIDANCE ON SCALING OF BALLAST WATER MANAGEMENT SYSTEMS

1 Reference in the Guidelines (G8)

1.1 In addition to the definitions given in the Guidelines (G8), the following terms are defined:

.1 *Base unit* is a ballast water treatment equipment as defined in the Guidelines (G8).

.2 *Scaled unit* is the ballast water treatment equipment that is based on the base unit but has been modified to accommodate a higher or lower treatment rated capacity (TRC).

1.2 An equipment review and certification of a scaled system should be undertaken by the Administration. Such a review should be supported by:

.1 Mathematical modelling and/or calculations demonstrating that any parameters that would affect system performance are equivalent between base and scaled units; and

.2 The results of the environmental tests specified in Part 3 of the Annex to Guidelines (G8), for each configuration of scaled units, should such tests be required by the Administration.

1.3 The assumptions made for the scaling of the base unit should be verified for each scaled unit (i.e. discrete models, e.g., 250 m^3/h, 500 m^3/h, 1,000 m^3/h) by testing to the requirements of Part 2 of the Annex to the Guidelines (G8) for shipboard tests (hereafter referred to as shipboard tests). The time required in paragraph 2.2.2.7 of the Guidelines (G8) may be reduced from 6 to 3 months.

1.4 The same consideration should be given for scaled systems (i.e. discrete models, e.g., TRC=250 m^3/h, 500 m^3/h, 1,000 m^3/h) that are tested according to the requirements for land-based tests.

1.5 In the case where all discrete models are tested according to the requirements for land-based tests, the most vulnerable model should be tested according to the requirements for shipboard tests, to demonstrate the ability of the model to operate in normal ships' conditions.

1.6 Combinations of base units and scaled units which have been verified in their performance according to paragraphs 1.2 to 1.5 should be regarded as multiple units mounted in parallel and do not fall within the scope of this document.

1.7 Failing to meet the provisions of 1.2 to 1.5, each scaled system should be tested according to the requirements for land-based tests and shipboard tests.

1.8 If scaling and shipboard testing is intended to be utilized to type-approve a system beyond its currently approved TRC without land-based testing then the following process applies:

.1 The documentation specified in paragraph 1.5 should identify the key internal and external performance parameters (e.g., dosage concentration, UV intensity, filter flux density, etc.) required to achieve the system's efficacy, and also specify the physical/environmental conditions and design parameters that affect these.

.2 Validated mathematical model and/or calculations should be used to predict that the key performance parameters will be achieved in the scaled unit design and that the fundamental mechanism of operation is not changed.

.3 It should be verified through shipboard testing that the scaled unit achieves the critical values of the key performance parameters utilizing the design determined by the model and or calculations identified in subparagraph 1.8.2.

.4 Modelling should address the efficacy and environmental impact of the system. The actual chemical analysis for by-products should be performed during shipboard testing, if necessary.

1.9 A representative number of scaled systems capacities, taking into account the treatment technology, should be tested according to the requirements for shipboard tests.

2 Reference in the Procedure (G9)

2.1 When scaling from systems that have received Basic and Final Approval from the Committee according to the Procedure (G9), the manufacturer and the Administration should ensure that any conditions on Final Approval of the base unit are still met for the scaled system or systems.

3 Issuing of Type Approval for systems using scaled units

3.1 The Type Approval Certificate issued by the Administration should include each and every scaled system if the scaling is done according to these procedures.

4 Application to existing Type Approvals involving scaled units

4.1 Administrations are encouraged to apply this guidance to systems having received Type Approval involving scaled units prior to the adoption of this guidance to the greatest extent possible.

IMO BWM.2/Circ.32 of 8 August 2011

Applicability of the Ballast Water Management Convention to hopper dredgers

1. The Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), concurred with the conclusion of the Ballast Water Review Group regarding the applicability of the BWM Convention to hopper dredgers and, with a view to facilitating its broad dissemination, approved the text set out in the annex.

2. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

APPLICABILITY OF BALLAST WATER MANAGEMENT CONVENTION TO THE WATER IN THE HOPPER AREA OF HOPPER DREDGERS

1. Hopper dredgers can be equipped with one or more large suction pipes, a cargo hold in the form of a hopper, several ballast tanks as well as multiple high-capacity pumps. The "hoppers" are the cargo compartments where the dredged material is contained and transported. Hoppers are not considered to be ballast tanks. For stability requirements, the hoppers are not considered to provide buoyancy. The hopper wall forms part of the vessel hull for construction requirements, and it has the same thickness requirements as the outboard hull.

2. According to Article 1.2 of the Ballast Water Management Convention, **"Ballast Water"** means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship. Water in the hopper is considered as outboard water, i.e. the water is not taken aboard. Furthermore, the water is not used to control trim, list, draught or stresses of the ship. For that reason, water present in the hopper area is not considered as ballast water.

3. Consequently, the Committee concluded that the provisions of the Ballast Water Management Convention are not applicable to the water in the hopper area of hopper dredgers.

IMO BWM.2/Circ.29/Rev.1 of 26 September 2011

Clarification regarding the application dates contained in regulation B-3 of the BWM Convention

1. The Marine Environment Protection Committee, at its sixty-first session (27 September to 1 October 2010), approved the amendments to BWM.2/Circ.19 regarding the clarification on the application dates of the ballast water performance standard contained in regulation B-3.1 of the BWM Convention.

2. In considering further clarification on the application schedule of the D-2 standard with regard to ships described in regulation B-3.4, the Marine Environment Protection Committee, at its sixty-second session (11 to 15 July 2011), agreed to add new explanatory text relevant to such ships to Circular BWM.2/Circ.29 and to disseminate the expanded circular as BWM.2/Circ.29/Rev.1. The expanded clarification is set out in the annex.

3. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

CLARIFICATION REGARDING THE APPLICATION DATES CONTAINED IN REGULATION B-3 OF THE BWM CONVENTION

1 Regulation B-3.1 of the Ballast Water Management Convention provides:

"A ship constructed before 2009:

.1 with a ballast water capacity of between 1,500 and 5,000 cubic metres, inclusive, shall conduct ballast water management that at least meets the standard described in regulation D-1 or regulation D-2 until 2014, after which time it shall at least meet the standard described in regulation D-2;

.2 with a ballast water capacity of less than 1,500 or greater than 5,000 cubic metres shall conduct ballast water management that at least meets the standard described in regulation D-1 or regulation D-2 until 2016, after which time it shall at least meet the standard described in regulation D-2."

2 Regulation B-3.2 of the Ballast Water Management Convention provides:

"A ship to which paragraph 1 applies shall comply with paragraph 1 not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in the year of compliance with the standard applicable to the ship."

3 The "anniversary date of delivery of the ship in the year of compliance" specified in regulation B-3.2, refers to years 2014 and 2016 indicated in regulation B-3.1. Consequently, ships with a ballast water capacity between 1,500 m^3 and 5,000 m^3, inclusive, are required to comply with the D-2 standard not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in 2014 under regulation B-3.1.1; and ships with a ballast water capacity of less than 1,500 or greater than 5,000 m^3 are required to comply with D-2 standard not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in 2016 under regulation B-3.1.2.

4 Regulation B-3.4 of the BWM Convention provides:

> "A ship constructed in or after 2009, but before 2012, with a ballast water capacity of 5,000 cubic metres or more shall conduct ballast water management in accordance with paragraph 1.2."

5 For purposes of implementation, regulation B-3.4 should be interpreted such that ships constructed during or after 2009, but before 2012, with a ballast water capacity of 5,000 cubic metres or more would be required to comply with the D-2 standard not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in 2016.

IMO BWM.2/Circ.27 of 5 October 2010

Framework for determining when a Basic Approval granted to one ballast water management system may be applied to another system that uses the same Active Substance or Preparation

1. The Marine Environment Protection Committee, at its sixty-first session (27 September to 1 October 2010), approved the Framework for determining when a Basic Approval granted to one ballast water management system may be applied to another system that uses the same Active Substance or Preparation developed by the BLG Sub-Committee at its fourteenth session (8 to 12 February 2010), as set out in the annex.

2. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

FRAMEWORK FOR DETERMINING WHEN A BASIC APPROVAL GRANTED TO ONE BALLAST WATER MANAGEMENT SYSTEM MAY BE APPLIED TO ANOTHER SYSTEM THAT USES THE SAME ACTIVE SUBSTANCE OR PREPARATION

1 INTRODUCTION

1.1 The "Procedure for approval of ballast water management systems that make use of Active Substances (G9)" (**Procedure (G9)**) provides that, subject to evaluation against the criteria developed by the Organization, an Active Substance or Preparation may be used for Prototype or Type Approval testing for the approval of different ballast water management systems (BWMS).

1.2 The objective of this document is to provide guidance for the manufacturers and the Administration, and for other interested parties, in preparing an application based on the use of an original Basic Approval and, for its subsequent evaluation by the GESAMP-BWWG for Final Approval according to Procedure (G9).

1.3 An Active Substance or Preparation should be identical to the Active Substance or Preparation that has already received Basic Approval and its treatment concentration should be less than or equal to the original Basic Approval. In addition, any recommendations by the MEPC for the Basic Approval, including neutralization and maximum allowable discharge concentration (MADC) considerations, should be applied.

1.4 The document provides a framework including criteria to enable direct comparison of the physical nature of the system, the chemical nature of the Active Substance or Preparation, and the legal and commercially sensitive nature of the information and data being transferred.

1.5 When considering an application, the use of an Active Substance or Preparation should be substantially similar to the original application that has gained Basic Approval, as this needs to be considered in the context of the BWMS within which it is used. This is because of the way different systems use the Active Substance or Preparation, that may change the nature of the Active Substance or Preparation itself. For example, hydrogen peroxide can be used as a chemical treatment on its own or as a catalyst in combination with a secondary method.

1.6 Any BWMS that has been granted approval to use a Basic Approval from another system is still subject to the Final Approval process, as set out in Procedure (G9).

1.7 Any BWMS seeking to use the Basic Approval from another system should also meet conditions or requirements placed on the original Basic Approval by the Committee.

1.8 Before considering the development of an application to use a Basic Approval from another system, an applicant should consider that the less similarity between the two systems, the more data that will need to be supplied to evaluate the application.

2 DEFINITIONS

For the purpose of this guidance, the definitions in Procedure (G9) apply and:

2.1 "**Applicant**" means any manufacturer or developer working with the Member State or Administration, in the development of a BWMS that intends to use the original Basic Approval for a certain Active Substance in the development of the BWMS.

2.2 "**Substantially similar**" in relation to "use" of an Active Substance or Preparation means the method of application and point of injection of the Active Substance or Preparation to the BWMS are not significantly different to that in the system granted approval.

3 PROCEDURE TO BE FOLLOWED

3.1 The manufacturer seeking to use an original Basic Approval for a BWMS that makes use of an Active Substance or Preparation for the purpose of obtaining a subsequent Final Approval for a BWMS using the same Active Substance or Preparation, should evaluate the extent to which the BWMS meets the criteria specified in this guidance document.

3.2 Proof that legal issues have been properly dealt with should be provided to the Administration by the manufacturer seeking to use the original approval.

3.3 The Administration having received a submission to use an original Basic Approval should review the application, taking into account the guidance in this document. If the Administration is satisfied that such utilization is acceptable, it should advise the Organization of its determination as appropriate. The Organization should circulate the information accordingly.

3.4 The Administration should submit the application for Final Approval to the Organization, as soon as possible in accordance with section 8.2 of Procedure (G9).

3.5 If the GESAMP-BWWG agrees that the application is complete and appropriate, it should proceed to consider the application for Final Approval of the BWMS.

3.6 If the GESAMP-BWWG finds that the application is not complete or is inappropriate, (or both), the GESAMP-BWWG should report their findings, as provided for in Procedure (G9), for consideration by the Committee.

3.7 Under Procedure (G9), the Committee of the Organization will make the final decision on whether to accept the recommendations of the GESAMP-BWWG to reject an approval of any proposal.

4 CRITERIA FOR ASSESSING WHETHER THE ACTIVE SUBSTANCES OR PREPARATIONS ARE IDENTICAL

4.1 The description of Active Substances and Preparations should include chemicals associated with the system, as required by the Procedure (G9) in section 4.1 and listed in detail in relevant sections of the GESAMP-BWWG Methodology, applicable at the time of this assessment.

4.2 If any of the identified chemicals is not listed in the original Basic Approval application, then utilization of Basic Approval is not appropriate.

4.3 The stated concentrations for storage, generation and treatment, as appropriate, of the Active Substances and Preparations should be equal to or less than those in the original Basic Approval application.

4.4 The maximum allowable discharge concentration or the worst case discharge concentration should be equal to or less than those in the original Basic Approval application.

4.5 Analytical data about the composition and structure of the Active Substances or Preparations should be provided to substantiate that the Active Substances and Preparations are identical.

5 MANNER OF APPLICATION OF ACTIVE SUBSTANCE OR PREPARATION

5.1 The BWMS design should be substantially similar including all physical processes used in the system: including method or methodology for dosing ballast water, any mechanical separation used, pumps and pipe work, phase of treatment (e.g., on uptake, discharge or both) and any necessary neutralization.

5.2 Application of the Active Substance and Preparation within the BWMS should be substantially similar, including:

– point of introduction of the Active Substance or Preparation; and

– method of application or generation of the Active Substance or Preparation (e.g., electrolytic generation).

6 GUIDANCE ON LEGAL ISSUES

6.1 A legally binding agreement under which access to information within an original Basic Approval is granted could include:

.1 name and address of the person to whom the Basic Approval rights are being shared;

.2 identification of each item of Basic Approval data being shared including:

.1 the name of the Active Substance and Preparation or item of data;

.2 whether the agreement is an exclusive use agreement, and, if so, when the period of exclusive use protection expires;

.3 the name of the person or laboratory that conducted the study;

.4 a statement that the applicant and approval holder understand that any false statement may be punishable under international, national or local legislation; and

.5 the names, signatures and titles of the applicant and the approval holder, and the date signed;

.3 in addition, the approval holder should submit to the Administration a notarized statement affirming that the person signing the agreement is authorized by the approval holder to bind the applicant.

6.2 The manufacturer seeking to use the Basic Approval for a BWMS that makes use of an Active Substance or Preparation for the purpose of Final Approval, should ensure that all relevant international, national and local legislation has been complied with.

IMO BWM.2/Circ.21 of 21 July 2009

Engineering Questionnaire on Ballast Water Management Systems

1. The Sub-Committee on Bulk Liquids and Gases, at its thirteenth session (2 to 6 March, 2009), noted the information provided in document BLG 13/INF.5 (Brazil) regarding an engineering questionnaire on the ballast water management systems.

2. Recognizing that the questionnaire, contained in the annex of document BLG 13/INF.5, might assist interested parties in the evaluation and comparison of different ballast water management systems, BLG 13 agreed that it would be beneficial to prepare a technical circular containing the engineering questionnaire for the information of the interested parties and their future reference.

3. The Marine Environment Protection Committee, at its fifty-ninth session (13 to 17 July 2009), endorsed the view of BLG Sub-Committee and approved the dissemination of the above-mentioned questionnaire through this circular.

4. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

ENGINEERING QUESTIONNAIRE ON BALLAST WATER MANAGEMENT SYSTEMS

The purpose of this Engineering Questionnaire on ballast water management systems is to provide a source of reference to be used by interested parties in order to: select and acquire these systems; develop technical specifications for the purchase and installation of a ballast water management system on board a vessel; design the installation of the ballast water management system for a ship or a group of ships; enable the comparison among different alternatives of ballast water treatment technologies and/or ballast water management systems (applying the same conceptual basis for such purpose); and obtain assistance on other related technical matters.

It is intended to assist ballast water management system manufacturers, vendors or suppliers, and ship designers, shipping companies, shipowners, shipbuilders, ship operators, classification societies, Administrations, etc., to better deal with such tasks, improving and speeding up communication between clients and vendors or manufacturers, which is vital to the required technical consultation and negotiation process. Vendors and manufacturers may opt for the confidentiality of some information collected or provided through the questionnaire (by means of setting confidentiality terms and conditions for the interested parties).

Comments: The questionnaire is not intended to be answered by manufacturers and forwarded to IMO for appraisal. Consequently, it does not require the establishment of a large database to be collated by the Organization, containing all the answers to the questionnaire. The purpose of this questionnaire is merely to provide a source of reference to potential buyers, serving as a technical guide only, so as to enable the required consultation, evaluation and comparison between different alternatives of ballast water treatment technologies.

Part 1 Technical form highlighting the basic characteristics and main data about the ballast water management system

The purpose of this form is to present the main characteristics of the ballast water management system to enable a clear and prompt understanding of its more relevant information. Thus, consideration of the group of questions set bellow will be facilitated, containing more technical details, when addressing engineering tasks.

The following data should be provided by the ballast water management system manufacturer, vendor or supplier:

1.1 System: official, commercial and other name;

1.2 Manufacturer and supplier: Name(s), full address(es), including electronics;

1.3 Ballast water management system description: main components, materials, technologies, treatment processes, functioning ways and basic diagram;

1.4 Flow-rate capacities that can be supplied in m^3/h; normal and maximum flow rate of the system under consideration to be installed on board a particular ship;

1.5 Footprint needed for each flow-rate in m^2, including the footprint required for the particular ship under consideration on board which the installation is intended; system and components weight.

1.6 As regards water treatment, provide the following information on how the system operates:

1.6.1 online during ballasting;

1.6.2 online during deballasting;

1.6.3 both the conditions above;

1.6.4 during voyage, either re-circulating the water or not (give details);

1.6.5 directly in the ballast tanks;

1.6.6 other (explain).

1.7 Regarding the ballast water treatment principle:

1.8 Does the system use an Active Substance(s)?

1.8.1 If so: What are such Active Substances? Are they generated on board ship or supplied to the ship?

1.8.2 If the system does not use an Active Substance(s) but produces/generates such substances, provide details about this process, pertinent safety precautions and recommendations, as well as technical reference about IMO document(s) on system approval, where more details can be obtained.

1.8.3 If the system does not use or produce an Active Substance(s), please provide details on the following:

1.8.4 Does it modify the composition of the treated ballast water?

1.9 Does it require storage and handling of chemical products on board for ballast water treatment purposes?

Note: The above information is related to the concern about potential impact on the environment (deballasting site).

1.10 Regarding the possible assembling arrangements for the system on board ship:

1.10.1 Should the system be placed in a concentrated and unique area? Or

1.10.2 Does it allow for the installation of its modules in different locations, optimizing the existing ship's free spaces? Or

1.10.3 Both assembly arrangements are possible.

1.11 Is the system adequate to be installed in dangerous zones or spaces in tankers (such as pump room and/or main deck)?

1.12 Regarding the process required to obtain the type approval certification for the ballast water management system, provide the following information, dates and reference details related to:

1.12.1 The ballast water management system Basic Approval by IMO/MEPC, informing the GESAMP-BWWG meeting when the system, after the evaluation of its active(s) substance(s), was recommended for this approval, the identification numbers of the related IMO/MEPC report that granted this approval and of the non-confidential IMO document submitted to the MEPC, as well as other available pertinent technical references.

1.12.2 The ballast water management system Final Approval by IMO/MEPC, informing the GESAMP-BWWG meeting when the system, after the evaluation of its active(s) substance(s), was recommended for this approval, the identification numbers of the related IMO/MEPC report that granted this approval and of the non-confidential IMO document submitted to the MEPC, as well as other available pertinent technical references.

Note: It is recommended to also include information that corroborates that all the GESAMP-BWWG and MEPC recommendations were properly attended.

1.12.3 The Type Approval Certification by the Administration, informing the Administration and recognized organization/classification society involved and/or responsible for the approval process, providing copy of the granted Type Approval Certificate.

1.12.4 Specify the last versions of Guidelines (G8) and Procedure (G9) applied in the system approval.

1.12.5 Indicate where the land-based tests required by Guidelines (G8) were carried out (place and name of the responsible institution or laboratory).

1.12.6 Indicate the name, type and deadweight of the ship (or ships) where the shipboard tests required by Guidelines (G8) were carried out.

1.13 On what types of ship this ballast water management system can be used? On what types of vessel, and under what conditions, has the system been tested on board?

1.14 What is the deadweight tonnage and ballast capacity that the system can be applied to? (Specify the minimum and maximum values.)

1.15 Provide a reference list about the ships, shipowners, ship operators and shipyards that have already acquired the ballast water management system (confidential treatment is suggested between the parties in negotiation for this kind of information).

1.16 What kind of information is available, i.e. video, technical leaflet or catalogue, computer presentation (with animation) or other source, such as the manufacturer website, to better describe how the ballast water management system, its equipment, and components operates to treat ballast water? Can this material be provided for the interested clients? (Provide comments and details.)

Part 2 Practicability and compatibility with the ship's design, operation and existing systems, as well as other technical details

2.1 What are the performance parameters of the system? (Essential to its control.)

2.2 Does the system allow for controlling the performance of the treated water as regards the D-2 Standard during the treatment process? If so, describe it.

2.3 How long does it take to treat a given volume of ballast water? At what temperatures?

2.4 Are post-treatment residence times required before discharge, and if so, what are the required times?

2.5 Does the system require complete re-circulation of the ballast water? If complete re-circulation is needed, how many re-circulations are required to meet the requirements of regulation D-2 of the BWM Convention?

2.6 Is the system automated? Completely or partially? (Make comments, providing technical details on the automation level and scope and on the system's controls.)

2.7 In case yes, how to control? (Algae and/or organisms detector or monitor, corresponding recorder, etc.)

2.8 Would this control system be reliable, accurate and sufficiently capable of dispensing with the collection of ballast water samples to check compliance with the D-2 requirements in the laboratory? (With the understanding and acknowledgement of such capacity by port State control inspectors, and with a pertinent certification for this purpose.)

2.9 Is the control system also suitable for adjusting the treatment process (such as, for instance, to intensify or reduce the electric current supply to an electrolytic cell used to generate the Active Substance and/or to dose the Active Substance or chemical injection for water treatment)? (In case yes, please provide details.)

2.10 In the case of a ballast water management system that requires the Active Substance to be supplied to the ship, is there a dosing pump for the injection of such substance? Is the control of such injection by the dosing pump automatic?

2.11 Is the system supplied with devices that facilitate collecting more representative samples of ballast water (in compliance with the Guidelines (G2))? In case yes, provide details.

2.12 When the system needs to receive the Active Substance or chemical, indicate the tank capacity required for that (in cubic metres), show the product supply arrangements to the ship and to the system, as well as other related details.

2.13 Provide information about the worldwide net of suppliers capable to provide the required Active Substances used by this ballast water management system to the ship. Inform the main ports where this supply can be effectively and promptly done.

2.14 Which were the results of the system's environmental tests required by the Guidelines (G8)? Summarize them.

2.15 How the shipboard tests required by Guidelines (G8) were performed? Inform the trip conditions, mentioning the ship's route, the ocean areas and latitudes involved, as well as the season and the total period of time for performing these tests. Inform also on which type of ship the shipboard tests were performed and how many trips were made for this purpose.

2.16 Inform if there were some failures during the system's environmental, land-based (these performed at a land-based testing facility) and shipboard tests, which implied on certain modifications and corrections of the ballast water management system under development, and which were the adjustments done to solve them and to obtain the type approval certification for the system.

2.17 What is the additional workload on board introduced by the ballast water management system and the staffing requirements for the system?

2.18 What is the highest sea state in the Beaufort scale in which the system can still operate?

2.19 Does the ballast water management system's operation affect the corrosion rate and the wastage of tanks, pipelines or any other equipment of the ship's ballast system associated with it?

2.20 Can the system be affected by incrustation that could lead to a drop in pressure and/or to a reduction in the flow rate? If so, indicate the percentages.

2.21 Is the system applicable to existing ships?

2.22 What are the installation requirements for the system? What are the system's requirements for deck space, weather-tight space or machinery room space?

2.22.1 Can the system only be installed during a dry-docking period?

2.22.2 Can the system be installed and evaluated while the vessel is alongside the pier, in service or removed from service?

2.23 What are the maintenance requirements for the system?

2.23.1 Can the system only be maintained during a dry-docking period?

2.23.2 Can the system be maintained available dockside?

2.23.3 Is specialist maintenance expertise required and is this available worldwide?

2.24 Are the ship's other functions and systems independent from the ballast water management system's operation?

2.25 Could the system be integrated into the other ship systems?

2.26 What are the calibration requirements of the system?

2.27 What are the results of the following system's environmental tests and evaluations?

2.27.1 exposure to various environmental extreme conditions including heat, cold, humidity, vibration, more critical conditions of ship's list and trim, and power fluctuations?

2.27.2 reliability and durability?

2.28 What is the expected life of the system?

2.29 Regarding land-based and full-scale shipboard tests, describe the experiments, equipment, and system configurations which were used, as well as provide a list of technical documents to be consulted to get additional information on these issues.

2.30 Has the system been assessed, by a competent Authority and/or by a recognized organization, as suitable for onboard application?

2.30.1 for new ships?

2.30.2 for existing ships?

2.30.3 In affirmative case, list all installation approvals that have been granted with the correspondent granting authority (or recognized organization)? (This question is a complement to the question of Part 1 related to "ballast water management system list of reference".)

2.31 Are there any individual system requirements, which affect the existing layout of the ship, like watertight envelope, generator capacity, etc.?

2.32 What are the requirements for on board storage of component spares and consumables?

2.33 What are the consistency results of multiple manufactured units of a system?

2.34 What type of supply shall the system need for its functioning on board – such as: electric energy (voltage; frequency; expected power required); compressed air (defining the pressure and flow rate); fresh and/or salt water (respective pressures and flow rates), etc?

2.35 Can the system be considered or categorized as an alternative ballast water management system in accordance with the provisions and purposes of the regulation B-3.7 of the BWM Convention? If so, provide further comments and considerations about this issue.

2.36 Can the system be installed on ships with special arrangements of ballast system, such as: bulk carriers with various overboard discharge points for deballasting; and tankers with one submerged pump inside each ballast tank (ships which do not have pump room too)? If so, indicate how and provide details of these special arrangements for installation of the ballast water management system.

Part 3 Safety

3.1 Do the system and its treatment processes present any risks to the health or safety of the crew, in particular to those responsible for operating the system, or even to the passengers, or risks to ship's safety? If so, describe the risks involved and specify the risk level as either: High; Medium, Low; Negligible; No Risk.

3.2 Are there, for instance, high voltage components, processes involving high heat, cryogenic processes, use of radiation or lasers, chemical reactions whose constituents or by-products present any risks, or high pressure liquids or gases? If so, what safety provisions are incorporated into the design and operating procedures for the system?

3.3 Does the system involve the use of Active Substances or components with special storage or handling needs? If so, how have these needs been addressed, in the system's operation and maintenance manuals? Furthermore, provide information on the applicable care to be followed and pertinent precautions to be taken into consideration.

3.4 Has a complete risk assessment, related to the installation of the ballast water management system in the intended ship, such as a HAZOP review, been conducted, by a specialized and competent organization? In affirmative case, what were the major safety findings?

3.5 Are there components with dissimilar metals exposed to saltwater? If so, what safeguards have been incorporated to protect the ship's structures, pipelines, equipment, valves and accessories against corrosion and excessive wastage? How have these needs been addressed, by the system and in the operation and maintenance manuals?

3.6 If the system operates during ballast operations, including uptake, discharge or transfer, are there adequate safety interlocks and failsafe measures to ensure vessel stability and structure is not compromised?

3.7 In the event of a vessel casualty does the system pose any additional risks?

3.7.1 Are there additional risks in the event of flooding?

3.7.2 Does vessel power loss present any additional risks?

Part 4 Biological efficacy, including pathogens

4.1 Present the findings of the system's biological efficacy tests, related to its approval process to type approval certification and compliance with D-2 standard.

4.2 Beyond D-2 requirements, when additional data are available, provide also the following useful information (considering possible additional/unilateral measures to be met).

4.2.1 System capability for the removal, elimination or inactivation of aquatic organisms for the various taxonomic groups, phytoplankton and zooplankton, beyond standard contained in regulation D-2.1, and for pathogens, beyond standard contained in regulation D-2.2 of BWM Convention.

4.2.2 Does the system eliminate:

4.2.2.1 Cysts? If so, describe and quantify.

4.2.2.2 All species or life stages which may present hazard to the aquatic environment? (A uniform way of presenting this information needs to be established.)

4.3 In case ballast water management is carried out during ballasting:

4.3.1 Could there be a re-growth of the organisms already treated during ballasting within the ballast tanks during the ship's subsequent voyage or time?

4.3.2 If so, what could be the estimated progression of the re-growth after 1, 2, 3, 4, 5 and 6 weeks after treatment? What is the recommended solution to ensure the performance standard of the ballast water at deballasting, as required by regulation D-2?

4.4 Can the system's efficacy be compromised if there is an increase in the ballast water's turbidity? If so, please describe the decrease in system's efficacy and performance.

4.5 Inform the percentage of the reduction in sediments that the system allows.

4.6 Concerning the concentration of solids in suspension in ballast water, what were the worst environmental conditions under which the ballast water management system was tested for approval?

4.7 What type(s) of adjustment(s) shall be required to the ballast water management system when it has to operate in environmental conditions more severe than those it was tested for approval? All the steps of these procedures need to be clearly specified.

Part 5 Cost-benefits, economic aspects and efficiency

5.1 What is the system's Capex (capital expenditure; in US$)? This answer is to be related to one or more specific flow rates (in m^3/h) that the system can contemplate.

5.2 Regarding the composition of Capex, what is the known or estimated cost of the system purchase and installation for vessels at the time of construction, and for the retrofitting of an existing vessel?

5.3 What is the system's Opex (operating expenditure; in US$/1000 m^3)? This answer is to be related to the cost of the system to treat a volume unit of ballast water.

5.4 In case of ballast water management system to be installed on board a ship in dangerous areas, such as the pump room and the main deck of oil carriers, there will be an additional cost in relation to the in-

formed Capex? Provide further comments and details about this, inclusive if the ballast water management system, or part of its modulus and components, will have to be adapted and certified for this purpose as explosion proof or intrinsically safe system/equipment. Furthermore, indicate if such adaptation can take some time and what time is estimated for this entire process to be duly carried out and successfully concluded.

5.5 What is the increase of fuel or oil consumption that is introduced by the use of this system on board? (According to ship's type and ballast capacity.)

5.6 What are the known or estimated maintenance costs on an annual basis?

5.7 What are the estimated costs of component spares and consumables on an annual basis?

5.8 What are the known or estimated disposal costs of any wastes, residuals, components or replacement parts?

5.9 When the treatment is done during ballasting, can all ballast water be treated to meet D-2 standard during the ship ballasting without delaying the ballasting operations? If delays to the ballasting operations are caused, indicate the time percentage or the additional hours needed to complete the ballasting operation.

5.10 What are the ship staffing requirements for system operation?

5.11 Could the system be considered efficient in energetic terms?

5.11.1 Which is its efficiency in terms of energy (expressed as units of energy required for treating each cubic metre of ballast water)?

5.11.1.1 Should the energetic efficiency be expressed as a function of the amount of energy required to treat a determined volume of water, or as a function of the power required to treat a determined flow rate of ballast?

5.11.1.2 Another conceptual way to express this energetic efficiency would be in terms of a percentage related to the energy supplied to the system and the energy effectively used in the treatment process.

5.11.1.3 An equipment certification like that used for refrigerators and a few other domestic appliances, in relation to greater or lower energy consumption, could also be considered.

5.11.1.4 Another current concern is to minimize the emission of pollutants, GHG and, mainly, CO_2, to the atmosphere. Present comments and technical details on the system about this.

5.11.2 It is suggested that the supplier of the ballast water management system gives due technical consideration to these above aspects and provides the best information about these issues.

Note: Lloyd's Register Guide on Ballast Water Treatment Technologies uses power in kW/1000 m^3 of treated BW.

5.12 When the ballast system is operating at a flow rate lower than its rated capacity (for instance, using only one of two ballast pumps for deballasting), does the ballast water management system allow for adjustments for operating under these conditions in order to be more economic and efficient from the energy standpoint?

5.13 Can the ballast water management system be considered as a process that uses a more advanced, cleaner and environmentally sound technology? (It can be effective, but, also, it can be effective and efficient.)

Part 6 Environmental acceptability and possible impacts of the system's by-products on the environment, crew, passengers and general public health, and resources

6.1 Does the system generate by-products that can have an adverse impact:

6.1.1 on the environment?

6.1.2 on human health: (a) ship's crew? (b) ship's passengers? (c) general public health in the areas where the ship operates?

6.1.3 on resources: (a) natural resources? (b) industrial resources? (c) other?

6.2 Does the system require any conditioning/neutralization of treated ballast water, prior to discharge it into the environment? If so, include details.

6.3 What are the characteristics of any additional air emissions, which result from the use of the treatment system?

6.4 Are there waste streams such as the residue of any filtering process or centrifugal concentrate? If so, inform:

6.4.1 What are the characteristics of the waste streams?

6.4.2 Are they suitable for discharge or must they be disposed of on shore?

6.4.3 What is the planned disposition of the waste streams?

6.4.4 When BW treatment is done during ship's ballasting, can waste streams be promptly and simultaneously discharged at the ship's ballasting site/port with the ballast water treatment?

6.4.5 When it is adequate to be discharged at sea, how quickly do the waste streams dissipate after discharge; and at what waste flow rate, sea state, marine current speed, tide regime, the discharge dissipation was tested/verified?

6.5 What are the system's possible impacts to the environmental, public health and resources, related to?

6.5.1 the interaction of the components and processes of its treatment with the environment, as a function of its ordinary use?

6.5.2 an eventual system failure?

6.5.3 its components or processes which, if damaged/affected due to an eventual vessel casualty, could cause problems and losses?

6.6 Does the use of the treatment system result in the discharge of ballast water at other than ambient temperature? If so, provide details.

6.7 Does the system have components or processes which use or produce Active Substances, produce residuals or by-products which present problems in handling, storage or disposal? If so, provide details. What system's components, such as batteries or lead-containing fixtures, cause special disposal concerns?

6.8 The total time required for ballast water management on board should be recorded according to the following table:

Information and monitoring of the time and re-circulation required for ballast water management

Ballast water treatment time	Total time required to treat BW (in hours)	Normal time for (in hours)		Additional time required for the BW treatment (in hours)	
During ballasting		Ship's unloading		Interference beyond the ship discharge normal time	
On voyage		Ship's ballast voyage		Interference beyond the ballast voyage normal time	
During deballasting		Ship's loading		Interference beyond the ship loading time	
Number of times required to re-circulate the BW on board for treatment				Correspondent time for applying the total BW re-circulation	

IMO BWM.2/Circ.20 of 21 July 2009

Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship and crew resulting from the treatment process

1. The Marine Environment Protection Committee, at its fifty-ninth session (13 to 17 July 2009), approved the Guidance to ensure safe handling and storage of chemicals and preparations used to treat ballast water and the development of safety procedures for risks to the ship and crew resulting from the treatment process developed by the BLG Sub-Committee at its thirteenth session (2 to 6 March 2009), as set out in the annex.

2. Member Governments are invited to bring this circular to the attention of all parties concerned.

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ANNEX

GUIDANCE TO ENSURE SAFE HANDLING AND STORAGE OF CHEMICALS AND PREPARATIONS USED TO TREAT BALLAST WATER AND THE DEVELOPMENT OF SAFETY PROCEDURES FOR RISKS TO THE SHIP AND CREW RESULTING FROM THE TREATMENT PROCESS

INTRODUCTION

1 The purpose of this guidance is to provide technical advice on the development of a methodology to ensure the safe handling and storage of chemicals used to treat ballast water, and the development of safety procedures addressing risks to the ship's crew resulting from the installation of a ballast water management system on a specific ship.

2 This guidance provides a framework for ensuring that these risks are addressed by the ballast water treatment or chemical/preparation* supplier and the owner and master of a ship, so that they can be included in the onboard Safety Management System as appropriate.

METHODOLOGY FOR ADDRESSING RISK

3 In order to ensure the safe handling and storage of chemicals used to treat ballast water and the development of safety procedures to address the risks to the ship and its crew arising from the treatment process, the following subjects, as appropriate, should be subject to a safety assessment (please note this is not an exhaustive list):

- the loading and storage of chemicals or preparations onto the ship;
- the transfer and application of chemicals or preparations from storage to the ballast water management system;
- the position of the ballast water management system and associated piping;
- operation of the ballast water management system;
- maintenance of the ballast water management system;
- spillages from the ballast water management system; and
- exposure to treated ballast water, chemicals or preparations.

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* Chemicals and preparations can be defined as Active Substances as defined in regulation A-1 of the BWM Convention

4 The safety assessment should be undertaken by the owner/master of the ship in conjunction with the supplier of the ballast water management system and the supplier of the chemical or preparation. This will allow:

- the specific design of the ship;
- the design of the ballast water management system (especially important if the technology is being retrofitted);
- the provisions of any servicing/maintenance contracts; and
- the specific properties and risk of any treatment chemical or preparation, to be identified, assessed and addressed in this appraisal.

5 The role of the supplier of the ballast water management system and the supplier of the chemical or preparation should provide the owner/master with the following information, as appropriate:

- a safety data sheet of the chemicals or preparations used;
- instructions on how any chemical should be loaded on the ship, stored and transferred/applied to the ballast water management system;
- health and safety information on the risks involved in operating the ballast water management system;
- health and safety information on exposure risks associated with operation of the ballast water management system and the use of chemicals or preparations; and
- details of personal protective equipment to be provided on board for use during any of these operations and during emergency situations, including spillage of the chemicals or preparations.

6 Based on the information provided by the supplier of the ballast water management system and the chemicals or preparations, the role of the owner/master in this process is to:

- identify the position and facilities needed to store chemicals, taking into account the risks involved in storing the chemicals and transferring and applying them to the ballast water management system, including fire protection and extinction;
- develop ship-specific health and safety procedures for loading ballast water treatment chemicals onto the ship;
- develop ship-specific health and safety procedures for handling and applying chemicals/preparations into the ballast water management system;
- develop ship-specific health and safety procedures for normal operation of the ballast water management system;
- develop ship-specific health and safety procedures for use in the event of a spillage on board vessels or crew exposure to treated ballast water, chemicals or preparations; and
- provide adequate personal and protective equipment for all operations covered in this guidance.

7 A safety assessment should be undertaken prior to installation of the ballast water management system, so that any mitigation measures identified can be incorporated either prior to, or during, installation.

8 The Safety Management System should be updated when appropriate, to take account of lessons learned during operation of the treatment technology or after any hazardous occurrence.

9 Shipowners and masters should ensure crew are instructed and trained appropriately, specifically to familiarize themselves with the Safety Data Sheet for any chemicals or preparations used in the course of ballast water treatment. Crew should also be made aware of any potentially hazardous by-products (aqueous or gaseous) which may be produced during the ballast water treatment process.

10 Notwithstanding the fact that the International Maritime Dangerous Goods (IMDG) Code does not apply to these chemicals in this context, the Code contains provisions that can be relevant to the safe stowage, handling and carriage of dangerous goods. The IMDG Code also contains requirements for electrical equipment, wiring, fire-fighting equipment, ventilation, smoking provisions and requirements for any special equipment. This could be a good source of information for ballast water treatment chemicals that are also categorized as dangerous goods to ensure appropriate construction, loading, stowage, segregation and carriage provisions are put into place. However, it should be noted that the provisions of the IMDG Code are based on intact and unopened packaging. This aspect should be taken into account when carrying out the safety assessment to ensure an equivalent level of safety is maintained when dangerous goods remain after use.

IMO BWM.2/Circ.17 of 20 October 2008

Guidance document on arrangements for responding to emergency situations involving ballast water operations

1. The Marine Environment Protection Committee (MEPC), at its fifty-fifth session (9 to 13 October 2006), instructed the Sub-Committee on Bulk Liquids and Gases (BLG) to develop a guidance document on arrangements for responding to emergency situations involving ballast water operations to assist Members to rapidly identify appropriate measure(s) whenever emergency situations occur.

2. The Sub-Committee on Bulk Liquids and Gases, at its twelfth session (4 to 8 February 2008), completed the work on the guidance document and invited the fifty-eighth session of the MEPC (6 to 10 October 2008) to approve this guidance and to instruct the Secretariat to issue a technical circular in this respect.

3. MEPC S8 (6 to 10 October 2008) approved the "Guidance document on arrangements for responding to emergency situations involving ballast water operations", as set out in the annex to this document, and requested the Secretariat to disseminate it through this circular.

4. Member Governments are invited to bring this circular to the attention of all Parties concerned.

* * *

ANNEX

DRAFT GUIDANCE DOCUMENT ON ARRANGEMENTS FOR RESPONDING TO EMERGENCY SITUATIONS INVOLVING BALLAST WATER OPERATIONS

1 Introduction

1.1 The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention) regulates the transfer of harmful aquatic organisms and pathogens from ships' ballast water and sediments. This Convention gives a Party, individually or jointly with other Parties, the right to introduce additional measures (e.g., immediate control measures in emergency or epidemic situations) in accordance with regulation C-1, taking into account the Guidelines for additional measures regarding ballast water management including emergency situations (G13).

1.2 The technical recommendations contained in this document provide guidance for use in emergency/epidemic situations, when specific and rapid measures need to be taken to prevent major threats and damages from the transfer of harmful aquatic organisms and pathogens through ballast water. This guidance would assist a Party to rapidly identify appropriate measure(s) whenever emergency situations occur in relation to ballast water operations. Countries should analyse the risks and nature of the threats that are posed by ballast water transfer in their waters and develop the structure that best suits them, taking into consideration the specific characteristics of the ecosystems involved and the resources available to them. This Guidance is not intended as a mandatory model or a set structure to be followed during potential or actual emergencies.

1.3 Examples of when an emergency situation may arise include:

- the introduction of organisms that may cause significant damage to the human population, human food supply, industry or other economic activities, or an area's natural biodiversity; or
- the threat of such an introduction through ballast water from a vessel that has come from another emergency area.

1.4 Appropriate and efficiently applied emergency measures are vital to minimizing both the potential damage in an affected area and the risk of other areas being affected. Emergency situations relating to environmental, economic and human health issues may represent an immediate threat to a particular location, or to neighbouring locations, as well as areas to be visited by vessels carrying ballast water from this location.

1.5 Rapid and correct handling of the emergency will also affect the likelihood of normalizing the situation in the longer term. It should be noted, however, that the priority for emergency situations should be the prevention of introduction of harmful aquatic organisms and pathogens. Once a relevant species has gained a foothold in an area, it will be very difficult to eradicate it without causing additional significant environmental or habitat damage. Often terrestrial eradication measures do not transfer easily into the coastal, tidal and marine environment.

2 Objective

2.1 The objective of this document is to provide guidance for the planning and implementation of effective measures in emergency situations related to ballast water operations, in order to minimize damage and to enable rapid normalization of the operation of ports and ships.

3 Application

3.1 This guidance document has been developed for Government agencies, bodies and institutions involved in, and responsible for, regulating and controlling harmful aquatic organisms and pathogens (including ballast water management), ports and other interested parties and stakeholders. However, for them to work, industry co-operation will be needed at the time of the emergency.

4 Emergency response planning

4.1 Emergency planning should be undertaken at the appropriate level for the country concerned, based on the risks faced from the introduction of harmful aquatic organisms and pathogens through ballast water. The appropriate level should be defined by the specific nature of the threat and can be at a national level, or if the threat is justified, at a bioregional, regional, estuary or port level. Alternatively, it could be undertaken on a regional seas level, in conjunction with other Member States. However, a sustainable balance between environmental protection and the social and economic impacts from delays or interruptions to port and ship operations, needs to be obtained.

4.2 Such planning should result in the formation of an Emergency Response Plan based upon identified scenarios. Such scenarios should be provided by undertaking a risk assessment to identify problems that are likely to occur. The size and content of such a Plan should be appropriate to provide a robust response to the high risk problems identified. By adopting this approach, a Member State can identify how to implement rapidly appropriate mitigation measures and establish preventative procedures, allocate resources, and conduct training. Provision of such resources should be based upon the appropriate risk, and be focused on mitigating any high risk scenarios. In practice, such measures are likely to be very simple and may only be identifiable for situations where ballast water discharges from certain vessels need to be prevented. The Party may also wish to broaden the scope of the Plan to cover other potential vectors for harmful aquatic organisms and pathogens, such as bio-fouling or accidental release of aquarium species.

4.3 In order to identify the most appropriate means of reducing the immediate threats represented by the emergency and to limit the longer-term consequences it may cause, an understanding of the threat is critical. The process of identifying and applying the most appropriate response must reflect the nature of the potential incident and its likely occurrence. Planning any response should include:

- identification of the potential source(s) of introduction and emergencies that could occur;
- calculation of the risk that these potential emergency scenarios may occur;

– identification of the impact of each potential scenario, beginning with the emergency that is most likely to occur. This should include the impacts on human health issues, proliferation of diseases and epidemics, damage to biodiversity and economic risk;

– identification of mitigation measures to reduce these risks should they arise;

– identification of measures to be implemented to mitigate an emergency situation, with appropriate coordination and clear identification of responsibilities for actions;

– identification of process to determine limits of the affected area; and

– identification of the responsible parties, including the lead agency, communication links, resources and information that will facilitate this decision making process and the resulting emergency operations.

It should be noted that information and data collection will be an integral part of each of these stages. This could be provided by, amongst others, existing physical, biological and chemical datasets of the environment; local knowledge (especially from fishermen and local boat operators); existing biological, physical and public health prediction programme/models; knowledge of vectors (such as shipping, fishing vessels, and recreational vessels) that could transfer harmful aquatic organisms and pathogens; and, expertise from third parties and other Parties to the Convention.

5 Risk assessment

5.1 A Party should identify the threats its coastal areas are exposed to by vessels discharging ballast water. Assessing such threats may be done by applying a risk assessment model. Such assessments may enable the identification of likely threat scenarios upon which an emergency strategy may be developed, taking into account the specific environmental and human health concerns, socio-economic impacts of an invasion, commitments in relation to any regional agreements, safety and biosecurity. The risk assessment procedure may be based upon the risk assessment principles defined in the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7).

6 Preparedness

6.1 For the identified higher risk scenarios, an assessment of the appropriate and readily available support and resources should be undertaken and, to the extent possible, a procedure should be set up to obtain such environmental and health-related resources when necessary. It is also recommended that the relevant resources to respond and mitigate these higher risk scenarios are identified along with an assessment of where they can be obtained from. Equipment can be sourced from existing resources, stockpiled resources, call-off contracts or a contract with a third party to provide equipment and/or management of the emergency. It should be noted, however, that the level of resources actually needed, will be a fraction of that needed for an oil or chemical spill, and simple technology should be used to mitigate any impacts. For example, the use of land-based tanks, when available, to receive ballast water from a ship that has arrived from another emergency area.

6.2 Agreements should also be established with capable institutions with relevant resources, experience and knowledge, in order to guarantee the provision of appropriate services and resources in case of an emergency. A network of experts may be identified either within the country, within a region or internationally. It should be noted that these resources should only be identified where the threat is very high, otherwise significant resources could be wasted and sit idle. Information on resource availability and capacity should be regularly updated in the Emergency Response Plan.

6.3 It is recommended that a procedure and a sampling format for emergency situations are developed in the Emergency Response Plan, in line with the IMO's Guidelines for ballast water sampling (G2). Ballast water samples, from one or more ships, as well as from port water, may need to be analysed. It may also

be necessary to establish temporary environmental monitoring in certain areas which should be clearly identified, delimited and defined. These procedures should also make provisions for: sending and receiving samples; correct preservation and packaging; chain of custody arrangements; analysis methodologies; and identifying capable laboratories.

7 Responsibilities

7.1 The Emergency Response Plan should establish an appropriate organizational structure in order to handle those emergency situations deemed likely to occur. Sufficient and appropriate management resources should be identified. Resource capability for emergency response should be available at all times. The ability to quickly cascade information on a particular threat is vital.

7.2 A Lead Agency should be identified (which in reality should be the Administration or another Government body) to take overall responsibility for emergency response. This includes the allocation of responsibilities and competence requirements. This could be done in parallel with oil and chemical spill plans and contingency planning, or in parallel with terrestrial pest and disease response arrangements. The Lead Agency should be authorized to request or to provide assistance whenever necessary.

7.3 The Lead Agency would be responsible for both implementing and standing down the emergency operation. During an incident the area of concern should be identified and be designated with an Emergency Status. This status should be replaced by a note of normalization once the emergency has passed and the response has been stood down. The declaration of an emergency should activate the procedures appropriate to the threats being faced. When these measures have been identified, agreed, and implemented, the emergency operation may enter into an operational phase where the Emergency Status may be lifted. This should happen following proven improvements of the situation where the level of risks and threats can be properly controlled. Criteria for both these options should be identified in the Emergency Response Plan. The Lead Agency should monitor the development of the situation and should lift the Emergency Status as soon as it is deemed appropriate to do so.

7.4 The Lead Agency should develop a responsibility matrix to be incorporated in the Emergency Response Plan. Roles and responsibilities may be defined for the following Parties:

- authorities including maritime, environmental, public health, port, and legal organizations;
- the owner, operator, shipping company, shipping agencies and ships;
- classification societies or recognized organizations;
- any supporting organization, e.g., research centres, universities, consulting and specialized services companies, reception facilities, etc.;
- representatives from the industry, tourism, fishing, aquaculture, etc.;
- analysis laboratories; and
- manufacturers of systems and equipment for treating ballast water.

8 Notification

8.1 The appointed Lead Agency should develop procedures in the Emergency Response Plan for the immediate notification of all stakeholders of any emergency status, or change in that status, in areas under the jurisdiction of the Party. These include mariners, ports, ship agents, local authorities and the International Maritime Organization (the Organization). The notification should identify the area to which the emergency status applies (delimiting the area in terms of latitude and longitude) as well as the cause of the emergency status.

8.2 Ships carrying ballast water away from a declared emergency status area should also be notified. Such notification should be done through the ship's flag State and should include the ship's name, IMO number, call sign, flag and position (in terms of latitude and longitude at the moment of such notification), origin, destination and route. Any relevant port States should also be notified with the estimated time of arrival of the ship in question. Such vessels may be considered of high risk and be subjected to a risk assessment (in accordance with the Guidelines for risk assessment under regulation A-4 of the BWM Convention (G7)). They also may have any exemptions granted under regulation A-4 withdrawn and be subject to additional ballast water management procedures.

8.3 Each State should also notify the Organization about critical areas where uptake and discharge of ballast water is prohibited, presenting their geographical limits, also indicating the motives for such decision, as well as whether the prohibition is temporary or permanent.

8.4 It is recommended that standard format for such notification is developed and, as appropriate, be included in the Emergency Response Plan.

9 Other elements in an Emergency Response Plan

9.1 Communication procedures between the institutions involved in the emergency response operation should be identified and established. A list containing national contact points and any dormant contract arrangements should also be prepared and maintained.

9.2 The Administration should facilitate the immediate entry into the country of resources and experts from other Member States under the same conditions as provided for in IMO's OPRC Convention, so that they can be deployed and give assistance as fast as possible.

10 Preventive actions

10.1 An emergency situation may be caused by vessels arriving from an area subjected to an emergency or epidemic situation (see paragraph 8.2). In such case, a measure may be established to prohibit the ship from discharging ballast water in certain areas (e.g., inside 200 nautical miles from the coast of the Party). In this case, the Party should be responsible for providing proper guidance to the ship's master, identifying alternative ballast water management measures and for sending information to the Organization. In all cases, the safety of the ship and its crew should be a primary consideration. Options for such action should be laid down in the Emergency Response Plan.

10.2 For certain emergency situations, appropriate surveillance methods (e.g., maritime crafts, aircrafts, remote sensing, etc.) should be developed in order to define and monitor the status of areas affected by the growth of toxic algae, or other outbreaks of harmful aquatic organisms and pathogens.

10.3 Examples of the impacts from existing harmful aquatic organisms and pathogens or epidemics that have already occurred should be incorporated in the Emergency Response Plan and the plan should be reviewed regularly to incorporate best practice and lessons learnt. Brief information on how problems have been mitigated could also be included.

11 Technical and scientific co-operation

11.1 Administrations should also share experiences of how they have responded, or are planning to respond, to emergency situations through the Organization, so that best practice can be promulgated. Reports following emergencies should contain descriptions of the problem, mitigation measures, time-scales, source, damages and losses caused, as well as any technical recommendations resulting from these experiences.

IMO BWM.2/Circ.13/Rev.3 of 28 May 2015

Methodology for information gathering and conduct of work of the GESAMP*-BWWG

1. Regulation D-3 of the Ballast Water Management Convention provides that ballast water management systems which make use of Active Substances shall be approved by the Organization. The Marine Environment Protection Committee (MEPC), at its fifty-third session (July 2005), adopted the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)* by resolution MEPC.126(53), and agreed with the establishment of a Technical Group under the auspices of GESAMP, to evaluate such systems and advise the Committee accordingly. At the same session the GESAMP-Ballast Water Working Group was also requested to develop a Methodology for information gathering and conduct of its work (the Methodology).

2. MEPC, at its fifty-sixth session (July 2007), having recognized that the Methodology is a living document, which may be further refined taking into account the best practices and lessons learned during the evaluation process, agreed that the Methodology, as drafted at that time, should be suitable for use as technical guidance by applicants submitting applications for approval of ballast water management systems.

3. Having adopted resolution MEPC.169(57), which revokes resolution MEPC.126(53) and contains the revised *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*, MEPC 57 requested the GESAMP-BWWG to update its Methodology in accordance with the revised Procedure (G9). The updated Methodology was subsequently circulated by means of BWM.2/Circ.13.

4. Taking into account the lessons learned and the experience gained, the GESAMP-BWWG carried out a thorough review of the Methodology and prepared a revised version which was approved by the GESAMP, endorsed by MEPC 63 and circulated as BWM.2/Circ.13/Rev.1. Another version was endorsed by MEPC 66 and subsequently circulated as BWM.2/Circ.13/Rev.2.

5. The GESAMP-BWWG further revised the Methodology at its Sixth Stocktaking Workshop in July 2014, clarifying identified inconsistencies related mainly to the circulation of Derived No-Effect Levels (DNEL) and taking into account lessons learned and experience gained. MEPC, at its sixty-eighth session (May 2015), endorsed the revised Methodology for information gathering and conduct of work of the GESAMP-BWWG, as set out in the annex, and agreed to disseminate it as BWM.2/Circ.13.Rev.3 to supersede BWM.2/Circ.13/Rev.2.

6. MEPC 68 further agreed that the revised Methodology should be applied to all submissions for Basic Approval of ballast water management systems to MEPC 71 and subsequent sessions and to the submissions for Final Approval of those systems.

7. Member Governments are invited to bring the revised Methodology to the attention of all parties concerned and, in particular, manufacturers of ballast water management systems that make use of Active Substances.

8. This circular supersedes circular BWM.2/Circ.13/Rev.2.

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* GESAMP stands for "IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNDP/UNEP/UNIDO Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection".

ANNEX

REVISED METHODOLOGY FOR INFORMATION GATHERING AND CONDUCT OF WORK OF THE GESAMP-BWWG

Endorsed by MEPC 68 on 15 May 2015

1 INTRODUCTION

This document contains the Methodology for information gathering and conduct of work of the GESAMP-BWWG when undertaking technical evaluations in accordance with the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*, as revised (adopted by resolution MEPC.169(57)).

1.1 Terms and definitions

For the purpose of this Methodology, these definitions are intended to supplement those in the Ballast Water Management Convention to facilitate a consistent evaluation of submissions:

.1 **Ballast Water Management Convention** (the Convention) means the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004.

.2 **Ballast Water Management** means mechanical, physical, chemical and biological processes – either singularly or in combination – to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments.

.3 **Preparation** means any commercial formulation containing one or more Active Substances including any additives. This term also includes any Active Substances generated on board for purposes of ballast water management and any Relevant Chemicals formed in the ballast water management system that makes use of Active Substances to comply with the Convention.

.4 **Active Substance** (AS) means a substance or organism, including a virus or a fungus, that has a general or specific action (chemical or biological) on or against harmful aquatic organisms and pathogens.

.5 **Relevant Chemical** (RC) means transformation or reaction product that is produced during and after employment of the ballast water management system in the ballast water or in the receiving environment and that may be of concern to the ship's safety, aquatic environment and/or human health.

.6 **Other Chemical** (OC) means any other substance, other than the Active Substance(s) or Relevant Chemicals, potentially associated with the system either intentionally or resulting from the treatment of ballast water.

.7 **Basic Approval** (BA) means the preliminary approval of Active Substances and the ballast water management system that uses them in order to comply with the Ballast Water Management Convention. Basic Approval should confirm that the available information does not indicate possible unacceptable adverse effects or a potential for unreasonable risk to environment, human health, property or resources. This should include consideration of potential risks associated with the Active Substance during full-scale deployment on commercial ships when possible.

.8 **Final Approval** (FA) means the approval of a ballast water management system using an Active Substance or Preparation to comply with the Convention and includes an evaluation of the whole effluent toxicity (WET) tests performed as part of the land-based Type Approval process in accordance with the Guidelines for approval of ballast water management systems (G8). The review does not include the re-evaluation of efficacy testing results conducted by Administrations under the Guidelines (G8). The Final Approval should confirm that previous evaluations of risks to ship, crew and the environment including storage, handling and application of Active Substances or Preparations remain valid and the concerns

expressed during the Basic Approval process have been addressed, as well as that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval.

.9 **GESAMP-Ballast Water Working Group (GESAMP-BWWG)**, also being referred to as the Group, means the Technical Group consisting of independent experts acting in their individual capacity that review the proposals for approval of ballast water management systems that make use of Active Substances submitted by the Administration and report, through the GESAMP, to MEPC. When reviewing the proposals, the Group should take account of any other relevant data as well as other relevant information submitted to it, or the Group is aware of, because of its members' expertise.

.10 **GESAMP** is the IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNDP/UNEP/UNIDO Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, an advisory and multi-disciplinary body consisting of specialized experts nominated by the sponsoring agencies. Experts working for the GESAMP act independently in their individual capacity.

1.2 Abbreviations used in the text

ABBREVIATIONS

<	less than
≤	less than or equal to
>	greater than
≥	greater than or equal to
µg	microgram
AS	Active Substance
ASF	interspecies allometric scaling factor
ASTM	American Society for Testing and Materials
BA	Basic Approval
BCF	bioconcentration factor
BIO_{inh}	bioavailability factor for inhalation
BMD	benchmark dose
b.p.	boiling point
bw	body weight
BWMS	ballast water management system
°C	degree Celsius (Centigrade)
CAS	Chemical Abstracts Service
cc	cubic centimeter
CEC	cation exchange capacity
CF_{abs}	correction factor for absorption
CF_{dr}	correction factor for dose regime
CMR	carcinogenicity, mutagenicity and reproductive toxicity
d	day(s)
DNEL DMEL	Derived No-Effect Level Derived Minimal Effect Level
DOC	dissolved organic carbon
DT_{50}	half-life of a substance
EC_{50}	effect concentration, 50% (median effective concentration)
EHC	environmental health criteria

EHS	Evaluation of Hazardous Substances
ESF	observed effect scaling factor
EU	European Union
FA	Final Approval
g	gram
G9	*Procedure for approval of ballast water management systems that make use of Active Substances (G9)*, as revised, adopted by resolution MEPC.169(57) in April 2008
GESAMP	IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNDP/UNEP/UNIDO Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GESAMP-BWWG	GESAMP-Ballast Water Working Group
GHS	Globally Harmonized System
GLP	good laboratory practice
h	hour(s)
HES	human exposure scenario
IARC	International Agency for Research on Cancer
IC_{50}	inhibition concentration, 50%
IMO	International Maritime Organization
IR	ingestion rate
ISF	intraspecies differences factor
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
Kd	sorption coefficient
kg	kilogram
K_{oc}	organic carbon-water partition coefficient
K_{ow}	octanol/water partitioning coefficient (also P_{OW})
K_p	sorption coefficient for ionic substances
L	litre
LC_{50}	lethal concentration, 50%
LD_{50}	lethal dose, 50%
LLNA	local lymph node assay
LOAEL	lowest observed adverse effect level
LOD	Limit of Detection
LOEL	lowest observed effect level
Log P_{ow}	logarithm of the octanol/water partition coefficient
MADC	Maximum Allowable Discharge Concentration
MAMPEC	Marine antifoulant model for PEC calculation
MAMPEC-BW	Marine antifoulant model for PEC calculation for ballast water
MARPOL	International Convention for the Prevention of Pollution from Ships
MEPC	Marine Environment Protection Committee
mg	milligram
mL	millilitre
m.p.	melting point

ng	nanogram
NOAEC	No Observed Adverse Effect Concentration
NOEC	No Observed Effect Concentration
NOAEL	No-Observed-Adverse-Effect Level
NOEL	No-Observed-Effect Level
NTP	National Toxicological Programme
OC	Other Chemical
OECD	Organisation for Economic Co-operation and Development
Organization	the International Maritime Organization
OSF	other interspecies scaling factor
PBT	Persistence, Bioaccumulation and Toxicity
PEC	Predicted Environmental Concentration
PNEC	Predicted No Effect Concentration
POC	Particulate organic carbon
POEM	UK Predictive Operator Exposure Model
P_{ow}	Octanol/water partition coefficient (also Kow)
PPE	protective personal equipment
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QFC	quantity of fish consumed
QSAR	Quantitative Structure-Activity Relationship
RC	Relevant Chemical
RCR	Risk Characterization Ratio
SF_{dur}	scaling factor for exposure duration
SOLAS	The International Convention for the Safety of Life at Sea
TLV	threshold limit value
TOC	Total Organic Carbon
TRC	total residual chlorine
TRO	total residual oxidant
US EPA	United States Environmental Protection Agency
WET	whole effluent toxicity test
WHO	World Health Organization
wt	Weight

2 GENERAL

2.1 Legal provision

Regulation D-3.2 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, stipulates that ballast water management systems (BWMS) that make use of Active Substances to comply with the Convention shall be approved by the Organization. During its fifty-third session, the Marine Environment Protection Committee (MEPC) adopted the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)* through resolution MEPC.126(53). Resolution MEPC.169(57) revoked the initial Procedure and provided a revised version of it.

2.2 Principles of acceptability of BWMS that make use of Active Substances

2.2.1 A ballast water management system that makes use of Active Substances accomplishes its intended purpose through action on potentially harmful aquatic organisms and pathogens in ships' ballast water and sediments. However, if the ballast water is still toxic at the time of discharge into the environment, the organisms in the receiving water may suffer unacceptable harm. Both the Active Substance itself or the Preparation, as well as the treated ballast water, should be subjected to toxicity testing in order to determine if an Active Substance or Preparation can be used and under which conditions the potential for harming the receiving environment or human health is acceptably low (G9: 3.2).

2.2.2 Any system that makes use of, or generates, Active Substances, Relevant Chemicals or free radicals during the treatment process to eliminate harmful organisms and pathogens in order to comply with the Convention should be subject to Procedure (G9) (G9: 3.3).

2.2.3 Ballast water management systems that make use of Active Substances and Preparations must be safe in terms of the ship, its equipment and the personnel to comply with the Convention (G9: 3.4).

2.3 Submission of an application for approval

2.3.1 The manufacturer should evaluate the system, the Active Substances or Preparations and the potential discharge in accordance with the approval criteria specified in the *Procedure for approval of ballast water management systems that make use of Active Substances (G9)*.

2.3.2 Upon completion of the evaluation the manufacturer should prepare an application on the system that makes use of Active Substances or Preparations and submit it to the Member of the Organization concerned. An application should only be made when the ballast water management system using Active Substance or Preparations has been sufficiently designed, developed and tested to provide the full data necessary for Basic or Final Approval as appropriate (G9: 8.1.2.2).

2.3.3 For systems that have previously received Basic Approval, the provisions of the "Framework for determining when a Basic Approval granted to one BWMS may be applied to another system that uses the same Active Substance or Preparation" should apply (see BWM.2/Circ.27).

2.3.4 Upon receipt of an application, the concerned Administration should conduct a careful completeness check to ensure that the application satisfies all the provisions contained in Procedure (G9) and that it is presented in the format recommended in this Methodology. Administrations should check the quality and completeness of any application against the latest version of the Methodology for information gathering and conduct of work of the GESAMP-BWWG, agreed by the Organization, prior to its submission to the MEPC. For Final Approval applications, the Administration should ensure that all the recommendations given by the GESAMP-BWWG during the Basic Approval process have been addressed to its complete satisfaction.

2.3.5 When the Administration is satisfied with the application received in accordance with paragraph 3.6 of Procedure (G9), it should submit a proposal for approval to the Organization consisting of the following:

.1 a description of the ballast water management system containing the non-confidential data in the usual format for dissemination as an MEPC document (preferably less than 50 pages). Administrations should aim at submitting the non-confidential descriptions of their ballast water management systems at the MEPC session, which precedes the MEPC session expected to decide on the approval of the systems. If this is not possible, the non-confidential description should be submitted at the earliest opportunity to the MEPC session expected to decide on the approval of the systems, but not later than the 28-week deadline established as indicated in paragraph 2.3.7 below. Documents containing non-confidential descriptions of

BWMS, which contain more than 20 pages, will not be translated into all working languages in their entirety. They should include, for translation purposes, a summary of the document not longer than four pages, with the technical content submitted as an annex in the language (e.g. English) that may be needed, for example, by working groups. Proponents seeking approval of BWMS that use Active Substances should thoroughly observe the provisions of paragraph 8.1.1 of Procedure (G9), bearing in mind that failure to provide the non-confidential information could result in Member States having insufficient data to approve the proposals when requested by the Committee. INF documents could be used in conjunction with proposals for approval to ensure that all safety and environmental protection data are made available;

.2 a Letter of Agreement concerning the arrangements between IMO and the submitting Administrations for the evaluation of the respective system. A template of such a letter is provided in appendix 1;

.3 the complete application dossier in accordance with Procedure (G9) consisting of the full description of the system, tests results, study reports, references and copies of the literature referenced and any other information relevant to that system. A summary of the key data should be provided in a tabular format. The complete application dossier should contain a list of contents indicating the location of the information in the application. Pursuant to paragraphs 4.2.2, 8.1.1 and 8.1.2.7 of Procedure (G9), the information mentioned above will be treated as confidential. It should be noted, however, that all information related to safety and environmental protection, including physical/chemical properties, environmental fate and toxicity, will be treated as non-confidential; and

.4 the assessment report in accordance with paragraph 4.3 of Procedure (G9).

2.3.6 Proposals for approval of ballast water management systems that make use of Active Substances that need to be evaluated by the GESAMP-BWWG should be addressed to:

Marine Environment Division
International Maritime Organization
4 Albert Embankment
London SE1 7SR
United Kingdom

2.3.7 A non-refundable registration fee to cover the costs related to the services provided by the GESAMP-BWWG should be paid upon receipt of the invoice issued by the Organization in this respect. It should be noted that the evaluation of a proposal for approval cannot be initiated before the payment of the fee mentioned above.

2.3.8 The GESAMP-BWWG aims to hold its meetings 20 weeks before the MEPC session expected to decide on the approval of the proposals made by the Member Governments. Consequently, a 28-week deadline has been established for the submission of the proposal for approval (including the complete application dossier). This allows eight weeks for the preparation of the meeting and enables interested parties to provide information that is relevant to the evaluation in accordance with the provisions of paragraph 8.1.2.6 of Procedure (G9). A timetable used for planning the activities related to the GESAMP-BWWG meetings is shown in appendix 2.

2.3.9 When due to the time constraints the GESAMP-BWWG is not able to evaluate all the proposals for approval submitted before the deadline established as indicated in paragraph 2.3.8 above, an extraordinary meeting of the GESAMP-BWWG may be convened, subject to the availability of the Group and with the authorization of the Secretary-General of the Organization.

2.3.10 The GESAMP-BWWG will endeavour to evaluate as many proposals for approval as possible re-

ceived before the deadline described in paragraph 2.3.8 above. When due to the time limitations between two consecutive sessions of the MEPC, the GESAMP-BWWG is not able to evaluate all the proposals for approval received before the above deadline, the remaining proposals will be evaluated on a "priority basis", in accordance with the order of submission during the subsequent meetings of the GESAMP-BWWG. Proposals for approval received after the established deadline will be referred to the MEPC session following the session used to establish the deadline and will be considered after any priority proposals not considered at previous meetings.

2.3.11 Upon receipt of a complete proposal for approval, the Organization will issue a confirmation letter indicating the date and the time the proposal has been received. In order to ensure complete transparency and a fair and impartial treatment of all the submissions, the proposals for approval are evaluated in the chronological order of their receipt.

2.3.12 Face-to-face meetings between the GESAMP-BWWG and applicants/ Administrations should be conducted at the request of the Administrations prior to the meeting and solely during Final Approval evaluations. Face-to-face meeting should be limited to one hour per Final Approval application.

2.3.13 Clarification of certain aspects identified during the preparation for, or in the process of, an evaluation of a proposal for approval may be requested by the GESAMP-BWWG, if it becomes evident that clarification is found to be necessary in order to finalize the evaluation. The clarifications should be received in a timely manner so that the GESAMP-BWWG is able to take the information into account during its evaluation of the system. A time limit for response to any request for clarifications should not exceed 12 hours unless otherwise agreed with the GESAMP-BWWG. Applicants may wish to designate a technical representative to provide clarifications on request during the Group's meeting.

2.3.14 After completion of the GESAMP-BWWG report, relevant annexes containing the results of the evaluation will be forwarded to the respective Administrations for confirmation that no confidential data are being disclosed. Unless the Administration advises otherwise before the deadline indicated in the request for confirmation (normally one week), the Secretariat will assume that the respective evaluation does not contain confidential data and will process the report according to the timetable shown in appendix 2.

2.3.15 If after the revision of the draft report of the GESAMP-BWWG the GESAMP provides comments on the findings of the Group, the Chair of the GESAMP-BWWG, in consultation with the members of the Group, as appropriate, will address the respective comments. The GESAMP provides confirmation of peer review and approval to the Organization for the information of the MEPC.

2.3.16 In case an Administration that has submitted a proposal for approval disagrees with the recommendations of the GESAMP-BWWG, such an Administration should be given the option to submit a document indicating the reasons for disagreement to the session of the MEPC expected to decide on the respective proposal. The explanatory document should be considered by the Committee in conjunction with the GESAMP-BWWG report.

2.3.17 Any supplementary data regarding a proposal not recommended for approval that was provided to the GESAMP-BWWG after the completion of its meeting will be considered as a new proposal, subject to a new deadline for evaluation according to the procedure described in this Methodology and subject to a new registration fee.

2.3.18 The Secretariat will endeavour to forward all the requests for clarification regarding the published reports of the GESAMP-BWWG received from the Administrations concerned to the Chairman of the GESAMP-BWWG and to the IMO consultant responsible for the respective meeting for response as appropriate.

2.4 Confidentiality and data protection

The confidential information in the submitted documents should clearly be identified. All information related to safety and environmental protection, including physical/chemical properties, environmental fate and toxicity, will be treated as non-confidential with the understanding that original proprietary test reports and studies, with the exception of the summary of the results and test conditions to be prepared by the applicant and validated by the GESAMP-BWWG, are considered confidential (G9: 8.1.1). Once an approval procedure is completed and the system using the Active Substance is approved, the following data should not be regarded as confidential:

.1 the name and address of the Administration;

.2 the names and addresses of the Administrations of the Active Substance and/or the Preparation (if different);

.3 the names and amount of the Active Substance(s) in the Preparations and the name of the Preparation;

.4 the names of other components of Preparations, in particular those that are regarded as dangerous according to the UN GHS or relevant IMO regulations and contribute to the hazard documentation of the Preparation;

.5 the names of Relevant Chemicals that may be formed during or after application of the BWMS and that may be of concern for the receiving environment or human health;

.1 the names of other chemicals that may be formed during or after the application of the BWMS with a technical justification as to why they should not be treated as Relevant Chemicals;

.6 methods of chemical analysis, including the Limit of Detection (LOD);

.7 physical and chemical data concerning the Active Substance, the Preparation and its components and Relevant Chemicals;

.8 a summary of the results of the tests conducted pursuant to section 4.2 of the Procedure (G9) to establish the effects of the substance(s) or Preparation(s) on humans and the environment;

.9 a summary of the results of the tests conducted on the treated ballast water pursuant to section 5.2 of Procedure (G9);

.10 recommended methods and precautions against dangers resulting from handling, storage, transport and fire;

.11 any means of rendering the Active Substance or Preparation harmless;

.12 methods of disposal of the product and of its packaging;

.13 procedures to be followed and measures to be taken in the case of spillage or leakage;

.14 first aid and medical advice to be given in the case of injury to persons;

.15 Safety Data Sheets, which should contain the information required of items .7 to .14;

.16 all results of the Persistence, Bioaccumulation and Toxicity (PBT) assessment and the risk characterization pursuant to sections 5.1 and 5.3 of Procedure (G9); and

.17 the uncertainty analysis specified in paragraph 6.4.3 of Procedure (G9).

2.5 Test methods

2.5.1 Tests, which are described in 3.3.2, 3.3.3 and 6.1.3., should be carried out under internationally recognized guidelines (preferably OECD or equivalent) (G9: 4.2.3), and according to an internationally recognized quality assurance system (G9: 4.2.4) (e.g. Good Laboratory Practice (GLP)). Information may be derived from existing data where an acceptable justification is provided. Full copies of sources of data (e.g. literature papers) and relevant documents for QA/QC (i.e. QAPP) should be provided electronically and in hard copy. The relevant document should include validity criteria for all tests.

2.5.2 Care should be taken to provide full supporting references and copies of the appropriate test laboratory reports in support of each application electronically and in hard copy. If submissions are lacking relevant information, it may not be possible for the GESAMP-BWWG to conduct its risk assessment.

2.5.3 Many substances have acquired large databases for many of the hazards concerned and a weight of evidence approach has become necessary to ensure that the rating reflects the body of data rather than simply using the most conservative value. This, however, means that the submission of all available end-point data for Active Substances and Relevant Chemicals is necessary to enable a review.

2.6 Alternatives to testing and non-submission of data

2.6.1 Alternative methods to testing on live organisms, e.g. *in vitro* testing methods, Quantitative Structure-Activity Relationship (QSAR), extrapolation by analogy to known chemicals, or grouping of similar substances, may be used whenever justified. Sufficient documentation or references to documentation on the validity of the method should be provided, as well as documentation that the substance or Preparation lies within the applicability domain of the method.

2.6.2 Information that is not necessary, owing to the nature of the substance, need not be supplied. The same applies where it is not scientifically justified or technically feasible to supply the information. In such cases, a justification for not supplying such information should be submitted.

2.7 Additional data

2.7.1 If, in the course of the review by the GESAMP-BWWG, the Group considers that additional data are found to be necessary to finalize the evaluation, the Group may, in exceptional circumstances, request that such data are provided to facilitate the review.

2.7.2 The applicant should not submit any additional data after the dossier has been submitted to the Organization for evaluation unless such data have been requested by the Group.

2.8 Retrospective requirement

Once a ballast water management system has received Final Approval under this procedure, then the respective applicant should not have to retrospectively submit new data in accordance with this revised Methodology.

3 APPLICATION DATA-SET

3.1 General

3.1.1 The dossier should contain the information specified in Procedure (G9). In cases where information requested in accordance with Procedure (G9) has not been submitted and no justification for non-submission is provided, the GESAMP-BWWG may not be able to judge the reasons for not submitting the information that may influence its evaluation and development of recommendations. A model for the presentation of the application data-set is given in appendix 3.

3.1.2 For Active Substances and/or Preparations, including any of its components as appropriate, data on properties should be included. For Relevant Chemicals, data should be provided as well.

3.1.3 Fate and effect testing should be performed in the laboratory with Active Substances and Preparations (G9: 5.3.1). However, the GESAMP-BWWG notes that normally assessment of fate (including degradation, bioaccumulation) is not feasible for Preparations, but only for individual substances. Therefore, degradation and fate testing of Preparations may not be appropriate. However, fate of individual substances of the Preparation should be demonstrated.

3.1.4 For treated ballast water, the Administration should provide both acute and chronic toxicity data (G9: 5.2.2) at Basic Approval application. The discharge toxicity tests at Final Approval should include acute and chronic toxicity test methods and results performed as part of the land-based type approval process with test species (fish, crustacea and algae). The results should include acute LC50 values and chronic NOECs (G9: 5.2.5). One hundred per cent concentrations of samples of ballast water discharge should be tested (G9: 5.2.6), if appropriate.

3.1.5 Any reference to specific test methods in the following is indicative with the purpose of providing guidance to an Administration on possible methods that may be considered. Any other internationally recognized test method may be used as well.

3.2 Identification of the substance or Preparation (G9: 4.1)

3.2.1 *Preparations*

3.2.1.1 For each Preparation, the application should include the following information (G9: 4.2.2):

.1 the Trade name;

.2 compositional information of the Preparation; including:

.1 the chemical (IUPAC) name of each component;

.2 the concentration of each component (liquids in g/L; solids in %w/w; gases in %v/v);

.3 the CAS number of each component;

.4 the UN number and proper shipping name of each component (where relevant);

.5 an indication of whether the component is an Active Substance or an additive, e.g. stabilizer or inhibitor or solvent, etc.; and

.6 particle size distribution, if in powder and/or granular form, as smaller particles (< 10 µm) present a greater hazard in potential cases of inhalation.

3.2.2 *Active Substances*

3.2.2.1 For each Active Substance, the applicant should provide the following information:

.1 the Trade name (where relevant);

.2 the chemical (IUPAC) name;

.3 the CAS number;

.4 the UN number and proper shipping name (where relevant);

.5 the molecular mass;

.6 the empirical formula;

.7 the structural formula;

.8 the classification in accordance with the UN GHS system;

.9 the purity of the technical material and identification of impurities (chemical name and CAS-numbers, etc.); and

.10 the identity of any stabilizers or necessary additives.

3.2.3 *Relevant Chemicals (G9: 2.1.4)*

3.2.3.1 Chemical analysis results should be accompanied by a specification of the applied Active Substance concentration, test conditions, characteristics of the test water (temperature, pH, salinity, TOC, DOC, TSS), sampling time, handling and storage of samples before analysis, and analytical method.

3.2.3.2 If chemical analyses were performed during more than one test run, the number of test runs should be stated and results should be reported in the form of individual measurements for each test run. Analytical results should be provided for both treated and control samples.

3.2.3.4 Reasoning should be provided, based on the documented state of knowledge, on which basis the selection of substances for inclusion in the chemical analysis was made, taking into account the chemical reactivity of the Active Substance and other components of the respective system.

3.2.3.5 Where the process might produce by-products when reacting with ballast water, the applicant should provide the following information for those products deemed to be Relevant Chemicals:

.1 the Chemical (IUPAC) name;

.2 the CAS number;

.3 the molecular mass;

.4 the empirical formula;

.5 the structural formula; and

.6 the classification in accordance with the GHS system.

3.2.4 *Other Chemical*

Unless a justification can be provided for not doing so, the following information should be supplied for Other Chemicals:

.1 the Chemical (IUPAC) name;

.2 the CAS number;

.3 the molecular mass;

.4 the empirical formula;

.5 the structural formula;

.6 the classification in accordance with the GHS system; and

.7 if relevant particle size distribution, if in powder and/or granular form, as smaller particles (< 10 μm) present a greater hazard in potential cases of inhalation exposure.

3.3 Data on effects on aquatic plants, invertebrates and fish, and other biota, including sensitive and representative organisms (G9: 4.2.1.1)

3.3.1 *General*

For every Active Substance or Preparation including any of its components, data should be presented and discussed either on the basis of toxicological tests or published toxicological knowledge for each end point listed.

3.3.2 *Acute aquatic toxicity*

3.3.2.1 Short-term L(E)C50 from freshwater or saltwater representatives of three taxa (algae, crustacea and fish) representing three trophic levels by internationally standardized tests, e.g. OECD guidelines 201 (Algae, Growth Inhibition Test), 202 (*Daphnia* sp. Acute Immobilization Test), 203 (Fish, Acute Toxicity Test), USEPA 850.1035 (Mysid shrimp acute toxicity test), and Mysid shrimp acute toxicity test (USEPA 850.1035) should be accepted. To reduce further any remaining uncertainty, applicants should, preferably, also submit data for two additional marine taxa (e.g. echinoderms, molluscs), ISO 10253 (Micro algae), ISO 7346-2, ISO 7346-3 (fish), and ISO 10706 (Daphnia).

3.3.2.2 Such acute aquatic toxicity data should be provided for:

.1 Preparations including any of its components;

.2 Active Substances;

.3 Relevant Chemicals; and

.4 discharged ballast water (G9: 5.2.3).

3.3.2.3 For algal toxicity testing, it is recommended that:

.1 two species of algae be used in toxicity tested testing at Basic Approval and Final Approval;

.2 Skeletonema costatum be used as one of the test species;

.3 the second test species is not a diatom; and

.4 *Phaeodactylum tricornutum* not be used as a test species.

3.3.3 *Chronic aquatic toxicity*

3.3.3.1 Long-term NOECs or EC10 from three freshwater or saltwater species (normally algae and/or crustacea and/or fish), representing three trophic levels by internationally standardized tests, e.g. OECD guidelines 210, 215, or 212 (fish), and OECD guideline 211 (*Daphnia*), should be acceptable. To reduce any further remaining uncertainty, applicants should preferably also submit two long-term NOECs from additional marine taxa (e.g. echinoderms, molluscs), ISO 10253 (micro algae), ISO 20666 (rotifer), and ISO 10229 (fish).

3.3.3.2 Short-term methods by US EPA and ISO for estimating the chronic toxicity of substances and discharge provide acceptable alternatives, since the identification of the sensitive sub-lethal endpoints and vulnerable life stages is the ultimate aim of the long-term testing.

3.3.3.3 Such chronic aquatic toxicity data should be provided for:

.1 Preparations including any of its components;

.2 Active Substances;

.3 Relevant Chemicals; and

.4 discharged ballast water (fish, invertebrate, plant) (G9: 5.2.3).

3.3.3.4 For the chronic aquatic toxicity testing using discharged ballast water (paragraph 3.1.4), based on the experience gained in the evaluation process of BWMS, it has been shown that, where BWMS using electrolysis and/or ozonation are concerned, there is no need to evaluate the results of chronic ecotoxicity testing using discharged ballast water . This is because the levels of Relevant Chemicals, such as THMs and HAAs, have been found to remain in similar concentration ranges that lead to PEC/PNEC ratios < 1. It is also recognized that with these types of BWMS, Relevant Chemicals other than the range of well-known chlorinated and brominated low molecular weight substances are not produced. Therefore, it is considered appropriate that such BWMS could fully be evaluated at Basic Approval without the results of chronic ecotoxicity testing. It should be emphasized that this waiver would not apply to BWMSs other than those systems mentioned and this waiver does not extend to Final Approval.

3.3.4 Endocrine disruption

3.3.4.1 Regarding the risks connected to endocrine disruption, non-standardized *in vivo* as well as *in vitro* tests may be conducted as long as no internationally standardized tests are available (e.g. full-life-cycle test on fish or amphibian metamorphosis assay). When substantial evidence on such effects is available, this should be taken into account on a case-by-case basis and in the effect assessment for each compartment of relevance. If there is no indication for endocrine disruption – e.g. due to the structure of the substance or results of other available studies – these tests may be waived.

3.3.4.2 Such information on endocrine disruption should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.3.5 Sediment toxicity

3.3.5.1 Substances that are potentially capable of depositing on or adsorbing to sediments to a significant extent should be assessed for toxicity to sediment-dwelling organisms. Testing is considered relevant only if log Kow > 3 or if there is similar adsorption behaviour and should include a maximum of three long-term tests with species representing different living and feeding conditions, e.g. *Chironomus* sp. (OECD 218), *Lumbriculus variegates,* including a minimum of two tests with marine species. If sediment toxicity tests are not available, toxicity should be assessed using established internationally recognized methods such as the equilibrium partitioning method (EPM) according to the "Technical Guidance Document on Risk Assessment" (TGD) to the European Biocides Regulation 1107/2009/EC.

3.3.5.2 For substances that are persistent in marine waters or may accumulate in sediments, a specific marine sediment assessment is necessary.

3.3.5.3 Such information on sediment toxicity should be provided for:

.1 Preparations including any of its components;

.2 Active Substances;

.3 Relevant Chemicals; and

.4 discharged ballast water.

3.3.6 Food web/population effects

3.3.6.1 The biomagnification and persistence in the food web should be discussed based on the results from aquatic toxicity testing, mammalian toxicity evaluation and bioaccumulation and biodegradation data.

3.3.6.2 An assessment of secondary poisoning is redundant if, for the substance of concern, the absence of bioaccumulation potential can be demonstrated (BCF < 500 L/kg wet weight for the whole organism at 5% fat). If not, testing should include:

.1 one long-term NOEC based on reproduction studies with a bird species; and

.2 two NOECs from long-term studies with two mammalian species (from section 3.4 below).

3.3.6.3 Such information related to the food web/population effects should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.4 Data on mammalian toxicity (G9: 4.2.1.2)

3.4.1 General

3.4.1.1 Information that is deemed to be scientifically not justified or technically not feasible need not be supplied. However, in such cases, a scientific justification should be submitted in order to explain why the data have not been provided. In general, testing with vertebrate animals should be avoided if another type of information is available that allows an assessment of hazards and risks to humans. Such alternative information may be obtained by validated *in vitro* methods, Quantitative Structure Activity Relationships (QSAR), and grouping or read-across with similar substances. If available, human cases or epidemiological evidence should be presented and discussed.

3.4.1.2 In general, information should be provided on the Active Substance and the Preparation, including any of its components, as appropriate. Information on Relevant Chemicals formed during or after application of the BWMS should be provided as well.

3.4.2 Acute toxicity

3.4.2.1 The acute toxicity data should be known for at least two routes of exposure, one of which should be the oral route. Active Substances or Preparations that are gases should be assessed in terms of inhalation toxicity.

3.4.2.2 The submission of dermal and/or inhalation studies instead of or in addition to oral studies may be requested depending on the physico-chemical properties of the substance, the proposed or potential application of the substance/products.

3.4.2.3 Such information on acute toxicity should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.3 Effects on skin and eye

3.4.3.1 Data should provide information on the degree and nature of skin, eye and associated mucous membrane irritation, especially with regard to the reversibility of responses. Data should provide sufficient information to assess the potential to cause skin sensitization reactions. Submitted data should concern testing with the Active Substance(s) or Preparation(s).

3.4.3.2 Data should include available information concerning a study on acute dermal irritation/corrosion

and a study on acute eye irritation/corrosion. The recommended tests are OECD guidelines 404 (Acute Dermal Irritation/Corrosion) and 405 (Acute Eye Irritation/Corrosion). Results from validated *in vitro* test methods may be submitted.

3.4.3.3 The recommended test guideline for Skin Sensitization is OECD guideline 406. While the guinea-pig Maximization test is considered to be the preferred adjuvant technique in certain cases, there may be good reasons for choosing the Buehler test or OECD TG 442A the Local Lymph Node Assay (LLNA) and OECD TG 442B (Lymph Node Assay: BrdU-ELISA). However, scientific justification should be given when either of the two latter mentioned is used. Information regarding hazard classification as a sensitizer should be submitted, if available.

3.4.3.4 Such information related to the effects on skin and eyes should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.4 Repeated-dose toxicity

3.4.4.1 Repeated-dose toxicity should be assessed based on data from a sub-chronic toxicity study (90-day) in two species, one rodent and one other mammalian species, using the oral route unless another one is more appropriate.

3.4.4.2 Such information on repeated-dose toxicity should be provided for:

.1 Preparation including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.5 Chronic toxicity

3.4.5.1 There is a need for a chronic toxicity assessment based on a study of a minimum duration of 12 months in two species – one rodent and one other mammalian species – unless a full justification demonstrates that this test is not necessary.

3.4.5.2 Any chronic study can be combined with a carcinogenicity study.

3.4.5.3 Such information on chronic toxicity should be provided for:

.1 Preparation including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.6 Developmental and reproductive toxicity

3.4.6.1 Data should include information from:

.1 a two-generation reproduction and fertility study (OECD guideline 416 – Two-Generation Reproduction Toxicity Study); and

.2 a prenatal developmental toxicity (teratogenicity) study in two species (OECD guideline 414 – Prenatal Developmental Toxicity).

3.4.6.2 However, this information can be waived provided that an argument is submitted based on structural relationships with a known reproductive toxicant, the results of other toxicity studies (including toxicokinetics), and concerns for endocrine disruption. Such information on developmental and reproductive toxicity should be provided for:

.1 Preparation including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.7 Carcinogenicity

3.4.7.1 Carcinogenicity data should be submitted based on studies performed with one rodent and one other mammalian species. In case this information is not provided, a scientific justification should be submitted.

3.4.7.2 Such information on carcinogenicity should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.8 Mutagenicity/genotoxicity

3.4.8.1 This information should address at least three tests: a bacterial gene mutation test, an *in vitro* mammalian cell cytogenicity study and an *in vitro* mammalian cell gene mutation assay. In case of positive or equivocal results, further *in vivo* mutagenicity data are necessary i.e. bone marrow assay for chromosomal damage or a micronucleus test. In case this information is not provided, a scientific justification should be submitted.

3.4.8.2 Such information on mutagenicity and genotoxicity should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.4.9 Toxicokinetics

3.4.9.1 Basic data on the toxicokinetics of Active Substances and other components of a Preparation as well as Relevant Chemicals should be included. Information on absorption, distribution, metabolism and elimination (e.g. OECD guideline 417) should be presented, if available, to allow better understanding of toxic effects and a reduction of animal testing. The potential for dermal absorption should be evaluated preferably *in vitro* or by physico-chemical data to reduce the need for any specific dermal toxicity testing.

3.5 Data on environmental fate and effect under aerobic and anaerobic conditions (G9: 4.2.1.3)

3.5.1 General

3.5.1.1 The rate and route of abiotic and biotic degradation of the Active Substances, components of a Preparation and Relevant Chemicals under aerobic and anaerobic conditions should be assessed, resulting in the identification of relevant metabolites in the relevant media (ballast water, marine and fresh waters) (G9: 5.3.4).

3.5.1.2 The solids-water partition coefficient (K_d) and/or organic carbon normalized distribution coefficient (K_{OC}) of the Active Substances, components of a Preparation and Relevant Chemicals should be determined (G9: 5.3.6).

3.5.1.3 The data submitted in accordance with this paragraph should clarify, in addition to the degradation of the substance, other relevant routes of dispersion in and from water, such as volatilization, adsorption, sedimentation and transformation into bound residues. Accordingly, the exposure of organisms living in water and the sediment should be established.

3.5.2 Modes of degradation (biotic; abiotic)

3.5.2.1 Testing should include:

.1 a study on hydrolysis at pH 5, 7, and 9 under aerobic conditions according to OECD guideline 111;

.2 a study on ready biodegradability according to OECD guideline 301 (Ready Biodegradability) or equivalent guidelines if the Active Substance is discharged only into fresh water;

.3 a study on ready biodegradability according to OECD guideline 306 (Biodegradability in Seawater) or equivalent guidelines if the Active Substance is discharged only into marine water;

.4 studies on ready biodegradability according to OECD guideline 301 (or equivalent guidelines) and OECD guideline 306 (or equivalent guidelines) if the Active Substance is discharged into estuarine water (e.g. inland harbour with contact to seawater); and

.5 it is recommended to evaluate the fate of Active Substances and Relevant Chemicals in fresh water (PSU < 3) and in marine water (PSU > 32) each at low temperatures (5°C) and higher temperatures (> 25°C).

3.5.2.2 If the Active Substance is not readily biodegradable, then the following higher tier studies should be conducted:

.1 a study on aerobic and anaerobic transformation in aquatic sediment systems according to OECD guideline 308 (Aerobic and Anaerobic Transformation in Aquatic Sediment Systems) or equivalent guidelines if Koc > 500 L/kg, using fresh or marine water depending on the kind of aquatic ecosystem where discharge is intended. At least one system with high organic matter/nutrient content and one with low organic matter/nutrient content should be tested;

.2 a study on aerobic transformation of low concentrations of organic contaminants according to OECD guideline 309 (Aerobic Mineralization in Surface Water – Simulation Biodegradation Test) or equivalent guidelines, using fresh or marine water depending on the kind of aquatic ecosystem where discharge is intended; and

.3 where relevant, a study on photo-transformation in water, e.g. US EPA OPPTS 835.2210 (1998) and/or OECD Guidance document on photo-transformation in water (1997).

3.5.2.3 Such information on the modes of degradation should be provided for:

.1 Active Substances;

.2 any other components of Preparations; and

.3 Relevant Chemicals.

3.5.3 Persistence and identification of the main metabolites in the relevant media (ballast water, marine and fresh waters)

3.5.3.1 The route of degradation in the higher tier simulation tests specified under section 3.5.2 of this Methodology should be characterized based on a mass balance, including mineralization and formation of bound residues. Reaction or transformation products formed that may be considered as Relevant Chemicals should be identified.

3.5.3.2 Such information on persistence and metabolites should be provided for:

.1 Active Substances;

.2 any components of Preparations; and

.3 Relevant Chemicals.

3.5.4 Bioaccumulation, partition coefficient, octanol/water partition coefficient

3.5.4.1 Data should include:

.1 information on bioconcentration and biomagnification, which have already been detailed earlier in this Methodolgy;

.2 a study into the log Pow according to OECD guideline 107 (Partition Coefficient (n-octanol/water): Shake Flask Method), OECD guideline 117 (Partition coefficient – n-octanol/water HPLC Method) or equivalent test guidelines. For very hydrophobic compounds, a slow stirring method is appropriate (e.g. OECD 123 (Partition coefficient – Slow Stirring Method)); and

.3 the partition coefficient between solids and liquids should be determined, e.g. according to EU Technical Guidance Document on Risk Assessment (2003) for at least three inocula, including fresh water sediment, marine sediment, and particulate matter (sludge) (OECD 106). If no measured data are available for a specific adsorbing material, it is assumed that all adsorption can be related to the organic matter of the medium, viz. standardization to Koc. This is only valid for non-ionic substances. For ionic substances, the Kp values and the test characteristics (% clay, CEC, % o.c., pH) should be reported.

3.5.4.2 Such information on bioaccumulation and partition coefficients should be provided for:

.1 Active Substances;

.2 any other components of Preparations; and

.3 Relevant Chemicals.

3.5.5 Bioavailability/biomagnification/bioconcentration

3.5.5.1 If log Pow >3, testing of the bioaccumulation potential should be considered taking into account the following points:

.1 one bioconcentration factor (BCF) determined in a bioconcentration study (at two dosing levels) with fish (e.g. OECD 305) or bivalves. The BCF should be based on uptake/elimination kinetics (k1/k2). The half-life for elimination should be reported. Fat content in marine fish typically ranges between 0.5 and 15% of the whole body weight. BCF should be normalized to 5% fat. The BCF, could e.g. be calculated with formulae 74 and 75 of the TGD (see 3.3.5) using the log Kow;

.2 the biomagnification and persistence in the food web should be discussed based on the results from aquatic toxicity testing, mammalian toxicity evaluation and bioaccumulation and biodegradation data; and

.3 there are no data provisions on bioavailability since it is considered that the bioavailability in the toxicity test systems is equivalent to the conditions under assessment. If the bioavailability of the Active Substance or Relevant Chemical in the discharge or the receiving environment is to be assessed, consequently, the bioavailability in the toxicity testing is to be reconsidered.

3.5.5.2 Such information on bioavailability/biomagnification/bioconcentration should be provided for:

.1 Active Substances;

.2 any components of a Preparation; and

.3 Relevant Chemicals.

3.5.6 Reaction with organic matter

3.5.6.1 The reaction of radicals produced by the action of Active Substances with organic matter should be addressed qualitatively as to identify products of concern to the environment and, where possible, quantitatively as to identify environmental concentrations. In cases where this information is not available, a scientific justification should be submitted.

3.5.6.2 Radical producing chemicals are capable of forming halogenated (chlorinated, brominated) hydrocarbons that may be of concern to environment or human health, in the presence of organic matter. For these substances, the freely and otherwise reasonably available information should be presented and discussed in relation to the proposed manner of application, since they are subject to the decision making criteria.

3.5.6.3 Such information on the reaction with organic matter should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.5.7 Potential physical effects on wildlife and benthic habitats

3.5.7.1 Data requirements consisting of physical/chemical properties are also required under other headings. Further guidance can be found in the MEPC-approved hazard evaluation procedure published as GESAMP Reports and Studies No.64. In cases where this information is not available, a scientific justification should be submitted.

3.5.7.2 Such data on the potential physical effects on wildlife and benthic habitats should be provided for:

.1 Preparations including any of its components;

.2 Active Substances;

.3 Relevant Chemicals; and

.4 discharged ballast water.

3.5.8 Potential residues in seafood

3.5.8.1 As appropriate, data should be submitted to assess the potential presence of residues of the Active Substance in seafood, the possible impact on consumer safety, and the level of residues that may be tolerated in seafood. Any available monitoring data on residues of the substance in seafood should be submitted.

3.5.8.2 Such data on potential residues in seafood should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.5.9 Any known interactive effects

3.5.9.1 Any knowledge (or absence of this knowledge) on interactive effects of the substances identified with the ballast water, with other Preparations to be used in ballast water, with other physical or chemical management of the ballast water, or with the receiving environment, should be reported. In cases where this information is not available, a scientific justification should be submitted.

3.5.9.2 Such information on known interactive effects should be provided for:

.1 Preparations including any of its components;

.2 Active Substances; and

.3 Relevant Chemicals.

3.6 Physical and chemical properties for the Active Substances and preparations and treated ballast water, if applicable (G9: 4.2.1.4)

3.6.1 General

Data should be submitted for the Active Substances, Preparations including any of its components, the treated ballast water on board and the Relevant Chemicals to allow for the identification of hazards to the crew, the ship and the environment.

3.6.2 Melting point

Data on the melting point should be provided for Active Substances.

3.6.3 Boiling point

Data on the boiling point should be provided for Active Substances.

3.6.4 Flammability (flash point)

Data on the flash point should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.5 Density (relative density)

Data on the density should be provided for:

.1 Active Substances; and

.2 discharged ballast water.

3.6.6 Vapour pressure, vapour density

Data on the vapour pressure and vapour density should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.7 Water solubility/dissociation constant

Data on the water solubility and dissociation constant should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.8 Oxidation/reduction potential

Data on the oxidation/reduction potentials should be provided for:

.1 Preparations including any of its components;

.2 Active Substances;

.3 Relevant Chemicals; and

.4 discharged ballast water.

3.6.9 Corrosivity and chemical influence on the materials or equipment of normal ship construction

3.6.9.1 For the dataset, at least the corrosivity and chemical influence to low carbon steel and other metals (e.g. stainless steel, Cu alloys and Ni alloys) and non-metals (e.g. gasket, coatings and seal materials) as may be found in a ship's seawater piping, fittings and structures that will be exposed to the Active Substance and Relevant Chemicals should be provided.

Data required for Basic Approval

3.6.9.2 For Basic Approval it is sufficient that the data from publicly available sources are submitted.

Data required for Final Approval

3.6.9.3 For Final Approval evaluation, the risk to the Safety of Ships should be assessed (see chapter 7.1).

3.6.10 Auto-ignition temperature

Data on the auto-ignition temperature should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.11 Explosive properties

Data on the explosive properties should be provided for:

.1 Active Substance; and

.2 Relevant Chemicals.

3.6.12 Oxidizing properties

Data on the oxidizing properties should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.13 Surface tension

Data on the surface tension should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.14 Viscosity

Data on the viscosity should be provided for:

.1 Active Substances; and

.2 Relevant Chemicals.

3.6.15 Thermal stability and identity of relevant breakdown products

Data on thermal stability and identity of relevant breakdown products should be provided for Active Substances.

3.6.16 Reactivity towards materials

Data on the reactivity towards materials, e.g. piping, gaskets and containers, should be provided for:

.1 Preparations

.2 Active Substances; and

.3 Relevant Chemicals.

3.6.17 pH

Since the pH of test waters can influence the formation of disinfection by-products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of the pH. Data on the pH should be provided for uptake water and discharged water.

3.6.18 Salinity

Since the salinity of test waters can influence the formation of disinfection by products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of the salinity. If water of different sources was mixed or any additives were added to natural test water to achieve the given salinity, this should be specified. Data on the salinity should be provided for uptake water and discharged water.

3.6.19 TOC, DOC, percentage of particulate matter

Since the organic carbon and particulate matter content of test waters can influence the formation of disinfection by-products, all chemical analysis results relating to the investigation of by-product formation should be accompanied by a specification of TOC, DOC, and total suspended solids (TSS). If any additives

were added to natural test water at Basic Approval or Final Approval to achieve the given concentrations, these should be specified. Data on the TOC, DOC and percentage of particulate matter should be provided for uptake water and discharged water.

3.6.20 Other known relevant physical or chemical hazards

Data on the any other known relevant physical or chemical hazards should be provided for:

.1 Active Substances;

.2 Relevant Chemicals; and

.3 discharged ballast water.

3.7 Analytical methods at environmentally relevant concentrations (G9: 4.2.1.5)

3.7.1 Recognizing that some methods may only cover a range of chemicals, e.g. TRO, analytical methods at environmentally relevant concentrations should be provided for:

.1 Active Substance; and

.2 Relevant Chemicals.

3.7.2 If the BWMS needs any monitoring system for Active Substance, the analytical methods and product name of the monitoring equipment should be provided.

4 USE OF THE ACTIVE SUBSTANCE OR THE PREPARATION

4.1 The manner of application

4.1.1 The proposal for Basic Approval and Final Approval should include the intended minimum and maximum dosage and maximum allowable discharge concentrations of Active Substances, if applicable.

4.1.2 The proposal should also include the manner of application of the Active Substance or the Preparation by the BWMS to ensure the dosage and concentrations mentioned in paragraph 4.1.1 above.

4.1.3 In relation to section 7 of Procedure (G9), the dossier should contain the necessary data addressing the following items:

.1 the technical manual or instructions by the Administration, including the product specification, process description, operational instructions, details of the major components and materials used, technical installation specifications, system limitations, and routine maintenance should be provided. The technical manual should also clearly specify the dosage to be added to ballast water and the maximum discharge concentration of the Active Substance therein;

.2 recommended methods and precautions concerning handling, use, storage, and transport;

.3 procedures to be followed in case of fire, and the nature of reaction products, combustion gases, etc.;

.4 emergency measures in case of an accident;

.5 an indication of the possibility of destruction or decontamination following emergency release in the marine environment;

.6 procedures for the management of wastes that may be generated during the operation of the BWMS;

.7 the manner or procedure of reuse or recycling of Active Substances or Preparations, if applicable;

.8 the possibility of neutralization;

.9 conditions for controlled discharge;

.10 minimum retention time of treated water on board before discharge;

.11 the amount of substance on board ship; and

.12 if an Active Substance is used that is convertible to TRO, the dose should be expressed as mg/L as Cl_2.

4.1.4 Appropriate risk management measures (e.g. for neutralization of the Active Substance in case of emergency or if PEC/PNEC at discharge > 1) should be described. These management measures are an integral part of the ballast water management system and should be evaluated in the assessment.

4.1.5 The risk management measures proposed should be evaluated in respect to the hazards to ship, personnel and the environment.

5 RISK CHARACTERIZATION – HUMAN HEALTH

5.1 In risk characterization for human health, the procedure is to compare the exposure levels to which the target groups are exposed or likely to be exposed with those levels at which no toxic effects from the chemicals are expected to occur.

5.2 A quantitative risk assessment is an iterative process and normally includes four steps:

.1 **Hazard identification** – what are the substances of concern and what are their effects?

.2 **Dose (concentration)** – response (effect) relation – what is the relationship between the dose and the severity or the frequency of the effect?

.3 **Exposure assessment** – what is the intensity, and the duration or frequency of exposure to an agent?

.4 **Risk characterization** – how to quantify the risk from the above data?

5.3 In assessing an acceptable level of a particular substance, the procedure usually follows moving from animal experiments or preferably human data (e.g. epidemiological studies) giving a No Observed Adverse Effect Level (NOAEL) or a Lowest Observed Adverse Effect Level (LOAEL) to derive an exposure limit above, which humans should not be exposed to (Derived No Effect Level - DNELs). Taking into account the critical health effect that can be exerted by a threshold mode of action, the lowest DNEL for each exposure route should be established by dividing the value of the critical dose descriptor, e.g. N(L)OAEL, by an assessment factor (AF) to allow for extrapolation from experimental data to real human exposure situations. Comparison of this exposure limit with a measured or estimated exposure level is then used to judge whether the situation is satisfactory or whether risk management measures are required.

5.4 Based on the most suitable N(L)OAEL, a DNEL for further risk assessment is derived. Generally, the DNEL is determined by applying an Assessment Factor (AF) according to the formula:

DNEL = N(L)OAEL/AF

5.5 Two groups of potentially exposed persons are distinguished as follows:

.1 workers (crew and port State control officers); and

.2 general public.

5.6 Particularly in case of occupational exposure, it is of primary importance to fully understand the processes and unit operations in which exposure occurs, and the actual activities resulting in exposure (potentially exposed individuals, frequency and duration of the routes of concern, what personal protective equipment and control measures are used to reduce or mitigate exposure, and how effective they are).

5.7 Where data are of an unsatisfactory quality, it is useful to conduct an assessment using "worst-case" assumptions. If this indicates a risk of no concern, the assessment needs no further refinement.

5.8 Exposure should always be assessed in the first instance for the unprotected worker and, if appropriate, a second assessment, should be made taking personal protective equipment (PPE) into account.

5.9 In the risk characterization, these estimates are combined with the results of the effects assessment and conclusions are drawn whether or not there is a concern for any scenarios assessed (Risk Characterization Ratio (RCR) = Exposure/DNEL).

5.10 When a risk assessment results in the conclusion that there is an unacceptable risk (RCR > 1), a second tier assessment should be performed by considering specific risk control measures in order to lower this risk to acceptable levels (protective clothing, respirators and self-contained breathing apparatus, crew training, good operational practices, etc.).

5.11 The effect assessment of the Active Substances, Preparations and Relevant Chemicals should include a screening on carcinogenic, mutagenic and endocrine disruptive properties, taking into account available information. There is no requirement for additional testing. If the screening results give rise to concerns, this should give rise to a further assessment.

5.12 As a general rule, exposure in the workplace must be avoided or minimized as far as technically feasible. In addition, a risk for the general public from secondary exposure to a non-threshold carcinogenic substance is also unacceptable.

5.13 Carcinogens can have a threshold or non-threshold mode of action. When it comes to threshold carcinogens, these can be assessed by using a Derived No-Effect Level (DNEL) approach, however in the case of the non-threshold carcinogens a different approach to risk assessment is recommended. In these cases, a Derived Minimal Effect Level (DMEL) should be determined.

5.14 Cancer risk levels between 10^{-4} to 10^{-6} are normally seen as indicative tolerable risk levels when setting DMELs. Where these values are available from internationally recognized bodies, they can be used to set DMELs for risk assessment purposes.

5.15 The assessment of the carcinogenicity, mutagenicity and reproductive toxicity properties of the Active Substance and the Relevant Chemicals takes place as part of the PBT assessment (see 6.1 of this Methodology).

5.16 The procedure followed is described in more detail in appendix 4.

6 RISK CHARACTERIZATION – ENVIRONMENT

The environmental risk assessment approach is set up according to the following principles:

.1 **Hazard identification** – what are the substances of concern and what are their effects?

.2 **Dose (concentration)** – response (effect) relation – what is the relationship between the dose and the severity or the frequency of the effect?

.3 **Exposure assessment** – what is the intensity, and the duration or frequency of exposure to an agent?

.4 **Risk characterization** – how to quantify the risk from the above data?

6.1 Screening for persistence, bioaccumulation and toxicity (G9: 5.1)

6.1.1 *Persistence (G9: 5.1.1.1)*

6.1.1.1 Persistence is preferably assessed in simulation test systems to determine the half-life under relevant conditions. Biodegradation screening tests may be used to show that the substances are readily biodegradable. The determination of the half-life should include assessment of Relevant Chemicals.

6.1.1.2 For persistence and degradation data, see sections 3.5.2 and 3.5.4 of this Methodology.

6.1.2 Bioaccumulation (G9: 5.1.1.2)

6.1.2.1 The assessment of the bioaccumulation potential should use measured bioconcentration factors in marine (or freshwater organisms). Where test results are not available, the assessment of the bioaccumulation potential of an organic substance may be based on the log P_{OW}.

6.1.2.2 For bioaccumulation data, see sections 3.3.6 and 3.5.3 of this Methodology.

6.1.3 Toxicity tests (G9: 5.1.2.3)

6.1.3.1 Acute and/or chronic ecotoxicity data, ideally covering the sensitive life stages, should be used for the assessment of the toxicity criterion.

6.1.3.2 For ecotoxicity data, see section 3.3 of this Methodology.

6.1.3.3 It is necessary to consider, whether an effect assessment based on tests in freshwater species offers sufficient certainty that sensitive marine species will be covered by any risk assessment.

6.1.4 Does the Active Substance and/or Preparation meet all three criteria for PBT?

Table 1: Criteria for identification of PBT Substances

Criterion	PBT criteria
Persistence	Half-life: > 60 days in marine water, or > 40 days in fresh water,* or > 180 days in marine sediments, or > 120 days in freshwater sediments
Bioaccumulation	Experimentally determined BCF > 2,000, or if no experimental BCF has been determined, Log Pow ≥ 3
Toxicity (environment) Toxicity (human health, CMR)	Chronic NOEC < 0.01 mg/L carcinogenic (category 1A or 1B), mutagenic (category 1A or 1B) or toxic for reproduction (category 1A, 1B or 2) according to GHS classification.

* For the purpose of marine environmental risk assessment, half-life data in fresh water and freshwater sediment can be overruled by data obtained under marine conditions.

See also table 1 in Procedure (G9).

6.1.4.1 Active Substances, Relevant Chemicals or Preparations identified as PBT substances will not be recommended for approval in accordance with paragraph 6.4.1 of Procedure (G9).

6.1.4.2 The CMR assessment is based on new regulations in several jurisdictions as part of the PBT assessment. This is a new development in the risk assessment methods as applied by jurisdictions to register

pesticides, biocides and industrial chemicals. Therefore, it is considered appropriate that including CMR into the methodology of the evaluation of BWMS is necessary to be in line with these jurisdictions.

6.1.4.3 Based on the appropriate toxicological studies on carcinogenicity, mutagenicity and reproductive toxicity, the Relevant Chemicals should be scored on these three items, using 1 (one) if the substance showed the hazard under consideration and 0 (zero) if the substance did not show the hazard under consideration.

6.1.4.4 For any Relevant Chemical showing at least one of the hazards, carcinogenicity, mutagenicity or reproductive toxicity, exposure should be avoided or relevant risk mitigation measures should be proposed to minimize exposure to an acceptable level using appropriate extrapolation methods.

6.2 Evaluation of the discharged ballast water (G9: 5.2)

6.2.1 General

6.2.1.1 The advantage of toxicity testing on the ballast water discharge is that it integrates and addresses the potential aquatic toxicity of the Active Substance, Preparation including any of its components and Relevant Chemicals formed during and after application of the BWMS.

6.2.1.2 For ecotoxicity data, see sections 3.3.2 and 3.3.3 of this Methodology.

6.2.1.3 The validity criteria should be clearly established during planning and the results of the validation should be stated in the report.

6.2.1.4 For the acute and chronic test using algae, the following three criteria should be taken into account:

.1 The biomass should increase exponentially by a factor of at least 16 within the 72-hour test period. This corresponds to a specific growth rate of 0.92 d^{-1}.

.2 The mean coefficient of variation for section-by-section specific growth rates (days 0-1, 1-2 and 2-3, for 72-hour tests) must not exceed 35% (OECD 201).

.3 The coefficient of variation of average specific growth rates in the replicates during the whole test period must not exceed 7% (ISO10253) or 10% (OECD 201).

6.2.2 Basic Approval

6.2.2.1 Testing should be performed in the laboratory using a sample prepared by simulation of the BWMS (G9: 5.2.1).

6.2.2.2 It is required that the residual toxicity of treated ballast water is assessed in marine, brackish and fresh water to provide certainty as to acceptability when the treated water is discharged because discharge of ballast water may occur in all three salinities and, therefore, risk assessment in three salinities is needed. Any limitations as to environmental acceptability should be clearly indicated in the submission.

6.2.3 Final Approval

6.2.3.1 Toxicity tests (Whole Effluent Toxicity test) with samples of ballast water treated with the BWMS from the land-based test set-up should be conducted (G9: 5.2.1.2, 5.2.2 and 5.2.3).

6.2.3.2 From a pragmatic standpoint, the following information would provide adequate safeguards for the environment and may replace the requirement of the submission of chronic toxicity data on the full-scale WET tests:

.1 acute toxicity testing using algae (or plants), invertebrates and fish; or

.2 chemical analysis demonstrating that there are no significant increases in the concentrations of chemical by-products during at least a five-day tank holding time or a holding time in accordance with the sampling scheme under the Guidelines (G8); or

.3 both chemical analysis and acute aquatic toxicity testing; immediately after treatment and after 24 or 48 hours.

6.2.3.3 Recently gained experience on the data availability of a full chemical analysis of the treated and/or neutralized ballast water in combination with the acute toxicity testing of the WET test would reveal, based on expert judgment, that unacceptable effects on the receiving aquatic environment are not to be expected. In this way, expensive chronic ecotoxicity testing may be avoided with sufficient safety on the potential effects on aquatic organisms.

6.2.4 Comparison of effect assessment with discharge toxicity

The results of the effect assessment of the substances that are likely to be present in the treated ballast water at discharge are compared to the results of the toxicity testing of the treated ballast water. Any unpredicted results (e.g. lack of toxicity or unexpected toxicity in the treated ballast water at discharge) should give rise to a further elaboration on the effect assessment (G9: 5.3.14).

6.2.5 Determination of holding time

6.2.5.1 The test data should be used to determine the no adverse-effect concentration upon discharge, i.e. the necessary dilution of the treated ballast water. The half-life, decay and dosage rates, system parameters and toxicity should be used to determine the amount of time needed to hold the treated ballast water before discharge (G9: 5.2.7). An indication of the uncertainty of the holding time should be given, taking into account different variables (e.g. temperature, pH, salinity and sediment loading).

6.3 Risk characterization and analysis

6.3.1 Prediction of discharge and environmental concentrations

6.3.1.1 Based on measured data of the Active Substances, Preparations including any of its components, and Relevant Chemicals, the worst-case concentration at discharge should be established.

6.3.1.2 Environmental concentrations after discharge of treated ballast water under controlled conditions during development and type approval tests should be estimated and provided in the application dossier for Basic Approval.

6.3.1.3 Environmental concentrations, under suitable emission scenarios developed describing typical full-scale use and discharge situations, should also be estimated for treated ballast water, Active Substances, Relevant Chemicals and other components of Preparations, as appropriate.

6.3.1.4 MAMPEC-BW, latest available version, should be used to calculate PEC values with its standard settings. All information about MAMPEC-BW can be found through the information given in appendix 5.

6.3.1.5 The MAMPEC-BW, latest available version, will calculate the stationary concentration in the harbour after discharge of ballast water. To account for local effects, near the ship at discharge, the local concentration at near ship is estimated using the formulae suggested in Zipperle et al., 2011 (Zipperle, A., Gils J. van, Heise S., Hattum B. van, Guidance for a harmonized Emission Scenario Document (ESD) on Ballast Water discharge, 2011):

$$C_{\max} = \frac{C_{BW} + (S-1) \cdot C_{mean}}{S}$$

where:

C_{max}	=	the maximum concentration due to near ship exposure (µg/L)
C_{BW}	=	the concentration found in the discharged ballast water (µg/L)
S	=	dilution factor based on sensitivity analysis with a higher tier model, default value = 5
C_{mean}	=	the mean concentration as output from MAMPEC-BW

6.3.1.6 The concentration calculated with this formula will be compared to acute toxicity data for the Active Substances and Relevant Chemicals to evaluate the short-term effects on aquatic organisms.

6.3.1.7 It is further recommended that the effect of cold and/or fresh water to the natural degradation process of the Active Substances and Relevant Chemicals is considered.

6.3.1.8 It is not necessary to undertake further assessment of temperature effects on the degradation rate of Active Substances and Relevant Chemicals if the PEC/PNEC ratio is found to be acceptable assuming no degradation.

6.3.1.9 If the PEC/PNEC ratio is not found to be acceptable assuming no degradation, further analysis is required. In the literature, the degradation rate of the Active Substance and Relevant Chemicals is typically determined at 20°C. Because the degradation rate is slower in cold environments, the risk should be assessed at temperatures of 1°C.

6.3.1.10 Extrapolation of the temperature effect for a difference less than or equal to 10°C is generally scientifically accepted when assessed by application of the Arrhenius equation according to the Q10 approach. Extrapolation of the temperature effect for a difference greater than 10°C should also be undertaken as a best estimate using the Arrhenius equation.

6.3.2 Effects assessment

6.3.2.1 The effect assessment of the Active Substances, Preparations including any of its components, and Relevant Chemicals is initially based on a data-set of acute and/or chronic ecotoxicity data for aquatic organisms, being primary producers (e.g. algae), consumers (e.g. crustacea), and predators (e.g. fish) (G9: 5.3.9).

6.3.2.2 An effect assessment could also be prepared on secondary poisoning to mammalian and avian top-predators where relevant. Only toxicity studies reporting on dietary and oral exposure are relevant, as the pathway for secondary poisoning refers exclusively to the uptake of chemicals through the food chain. It might be necessary to extrapolate threshold levels for marine species from terrestrial species assuming there are interspecies correlations between laboratory bird species and marine predatory bird species and between laboratory mammals (e.g. rats) and the considerably larger marine predatory mammals. An assessment of secondary poisoning is redundant if the substance of concern demonstrates a lack of bioaccumulation potential (e.g. BCF < 500 L/kg wet weight for the whole organism at 5% fat) (G9: 5.3.10).

6.3.2.3 An assessment of effects to sediment species should be conducted unless the potential of the substance of concern to partition into the sediment is low (e.g. K_{OC} < 500 L/kg) (G9: 5.3.11).

6.3.2.4 The effect assessment of the Active Substances, Preparations and Relevant Chemicals, taking the indicated information into account, should be based on internationally recognized guidance (e.g. OECD) (G9: 5.3.13).

6.3.3 Effects on aquatic organisms

6.3.3.1 For assessment of effects to the aquatic environment, appropriate Predicted No-Effect Concentrations (PNEC) should be derived. A PNEC is typically derived at a level that, when not exceeded, protects

the aquatic ecosystem against toxic effects of long-term exposures. However, for situations where only short-term exposures are expected, an additional PNEC for short-term (or near ship) exposure may be useful. PNEC values are normally derived from acute and/or chronic aquatic toxicity results for relevant aquatic species by dividing the lowest available effect concentration with an appropriate assessment factor. For the aquatic effect assessment, the assessment factors, given in table 2, should provide guidance although these may be altered on a case-by-case basis based on expert judgment. In cases where a comprehensive data-set is available, the PNEC may be derived with a mathematical model of the sensitivity distribution among species.

Table 2: Assignment of Assessment Factors (AF) used for deriving PNEC values

Data-set	Assessment Factor		Rule number
	PNEC general	PNEC near ship	
Lowest* short-term L(E)C_{50} from freshwater or marine species representing one or two trophic levels	10,000	1,000	1
Lowest* short-term L(E)C_{50} from three freshwater or marine species representing three trophic levels	1,000	100	2
Lowest* short-term L(E)C_{50} from three freshwater or marine species representing three trophic levels + at least two short-term L(E)C_{50} from additional marine taxonomic groups	100	10	3
Lowest* chronic NOEC from one freshwater or marine species representing one trophic level, but not including micro-algae	100		4
Lowest* chronic NOEC from two freshwater or marine species representing two trophic levels, which may include micro-algae	50		5
Lowest* chronic NOEC from three freshwater or marine species representing three trophic levels, which may include micro-algae	10		6

Notes: * .1 If the lowest value is not used, based on expert judgement, a scientific rationale should be submitted.

.2 AF assigned to chronic data may be lowered if sufficient (for instance three different trophic levels) acute values are available.

.3 See section 3.3.3 of this Methodology for information on suitable chronic testing.

.4 For the determination of the assessment factor for the NOEC values in table 2 micro-algae have been excluded because of the short duration of the chronic test for algae (4 days) and, therefore, it is not considered by some jurisdictions as a real chronic test.

.5 The rule numbers refer to the GESAMP-BWWG Database containing the 43 substances as indicated in appendix 6 to this Methodology and indicates the relevant Assessment Factors as used for these 43 substances.

6.3.3.2 In some cases, the $PNEC_{near\ ship}$ may be substantially lower than the $PNE_{Charbour}$ due to insufficient availability of acute ecotoxicity data. In such cases, the $PNE_{Cnear\ ship}$ should be set equal to the $PNEC_{harbour}$. This would still be considered a worst-case PNEC.

6.3.3.3 PNEC values should be derived for any substances that may be found in treated ballast water in concentrations that may be of concern for the aquatic environment. The relevance of deriving PNEC values for Active Substances, any other components of Preparations and/or Relevant Chemicals should thus be considered.

6.3.3.4 Currently there is no compelling physiological or empirical proof that marine organisms are more sensitive than freshwater organisms or vice versa and therefore, an additional assessment factor is not applied. Should this, however, be demonstrated for the substance under consideration, an additional assessment factor should be taken into account.

6.3.3.5 Where data are available for additional marine taxa, for example, rotifers, echinoderms or molluscs, the uncertainties in the extrapolation are reduced and the magnitude of the assessment factor applied to a data-set can be lowered.

6.3.3.6 Because sediment constitutes an important compartment of ecosystems, it may be important to perform an effects assessment for the sediment compartment for those substances that are likely to transfer substantially into the sediment.

6.3.4 Comparison of effect assessment with discharge toxicity

The results of the effect assessment of the substances that are likely to be present in the treated ballast water at discharge are compared to the results of the toxicity testing of the treated ballast water. Any unpredicted results (e.g. lack of toxicity or unexpected toxicity in the treated ballast water at discharge) should give rise to a further elaboration on the effect assessment (G9: 5.3.14).

7 RISK ASSESSMENT

7.1 Risk to safety of ship

7.1.1 The potential risk to the safety of the ship and crew raised by the operation of the BWMS should be assessed, taking into account the identified risk mitigation measures to be applied and any relevant legislative requirements such as provided in SOLAS and MARPOL. Potential risks to the ship/crew may include, inter alia:

.1 increased corrosion;

.2 fire and explosion;

.3 storage and handling of the substances;

.4 contact with, or inhalation of, process products; and

.5 noise.

7.1.2 The BWMS that make use of an Active Substance (such as hypochlorite electrolysis, chlorine dioxide, sodium hypochlorite, peroxyacetic acid or ozone) may have a direct effect on organic material like epoxy tank coatings. Depending on the dose and degradation rate of Active Substance there could be an impact on the coating system. Particularly, for a BWMS with a TRO dose $\geq$ 10 mg/L, expressed as TRO as Cl_2 mg/L, compatibility is validated against a coated surface by test described in paragraph 7.1.3.

7.1.3 Testing should be conducted with two series of test panels and the coating shall be applied in accordance with table 1 of the *Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers* (PSPC) (resolution MSC.215(82)). Each test should be carried out in duplicate. One set of panels should be exposed to untreated ballast water and the other to treated ballast water. Other test conditions are described in the table below.

Parameters	Quantification	Reference[1] /Remark
The size of each test panel	200 mm x 400 mm x 3 mm	NACE standard TM0112-2012
Depth of immerse	250 ± 10 mm	NACE standard TM0112-2012
Water temperature in tanks for exposure	> 35 ± 2 °C	NACE standard TM0112-2012
The total test duration	More than 6 months	NACE standard TM0112-2012
Ballast water	Natural seawater (> 32 PSU)	Preferred by GESAMP/BWWG but artificial seawater is accepted
Active Substance Dose	At maximum dose, which is evaluated by the Group at Basic Approval	Modified from NACE standard TM0112-2012
Renewal frequency	Every 7 days	Modified from NACE standard TM0112-2012

[1] NACE International has as a point of policy that when one of its standards are made mandatory by a major International governing body then that standard will be available at no cost to the general public by placement on its website outside the firewall. This would apply to NACE standard TM0112-2012 for Ballast Tank Coating evaluation.

7.1.4 Testing of corrosion should take place in the laboratory, but it is recommended to make use of the full-scale BWMS which is to be used for efficacy testing in accordance with Guidelines (G8), for the preparation of treated ballast water for this purpose. However, if it is impractical to maintain the renewal frequency described in the table, ballast water may be prepared by a separate treatment using an identical BWMS.

7.1.5 After the exposure duration, adhesion, blistering, cracking, delamination and corrosion around a scribe should be determined, scored and reported.

Acceptance criteria

7.1.6 In order to determine whether the BWMS has influenced the coating's properties as evaluated according to ISO 4624 and 4628, the principles and acceptance criteria mentioned in 7.1.7 should be employed. Paint coatings evaluation should be made as direct comparisons between samples subject to treated and untreated ballast water, respectively. Only the difference should be used for the final assessment. Paint coatings for BWMS compliance testing will normally be PSPC approved, and the present evaluation should not be a re-evaluation of approved products. "Pass/Fail" is judged by comparison with the "untreated" sample, i.e. the sample that has been exposed to untreated ballast water in parallel with the ballast water management system.

7.1.7 For the BWMS to be found suitable for Final Approval, it should not fail in any test evaluation as specified below:

.1 ISO 4624: Adhesion: "Fail" if adhesion at treated panel is below 5 MPa and treated panel shows more than 20% reduction compared to untreated panel;

.2 ISO 4628-2: Blistering: "Fail" if blisters occur;

.3 ISO 4628-4: Cracking: "Fail" if the density and/or size and/or depth in crease with three or more units from the one exposed by the untreated ballast water; and

.4 ISO 4628-8: Delamination and corrosion around a scribe: "Fail" if the difference between treated and untreated is greater than 3 mm.

7.1.8 It is recommended that these Pass/Fail criteria be reviewed no later than one year after the implementation of this new chapter to the Methodology (BWM.2/Circ.13/Rev.2).

7.2 Risks to human health

7.2.1 *General*

7.2.1.1 The human health risk assessment should follow generally accepted guidelines including acute/short-term and long-term exposure situations. The risk assessment should entail hazard identification and, as appropriate, dose (concentration) – response (effect) assessment, exposure assessment and risk characterization as indicated in section 5.2 of this Methodology. The population groups deemed to be at risk and so to be examined should include crew, passengers and all personnel, including the public, in ports. Potential health risks connected to the exposure of consumers via seafood or persons at the coast (e.g. beach) after discharge should be evaluated. Special attention should be given to service and repair of the system by technicians and accidental situations on board (e.g. specific personal protection equipment). The evaluation of the risks to human health should include risk reduction (risk management) by specific measures proposed by the manufacturer and of the ballast water management system.

7.2.2 Health effects in humans

The effect assessment of the Active Substances, Preparations and Relevant Chemicals should include a screening on carcinogenic, mutagenic and reproductive toxic properties. If the screening results give rise to concerns, this should give rise to a further effect assessment (G9: 5.3.12) (see also section 6.1.4 of this Methodology).

7.2.3 Human Exposure Scenario

7.2.3.1 A Human Exposure Scenario (HES) should be provided by the applicant as part of the risk assessment procedure for ballast water management systems, using the guidance contained in appendix 4 of this Methodology (G9: 6.3.3).

7.2.3.2 The risk assessment should include a description of the ballast water treatment process associated with the system as a set of unit operations, i.e. in doing so, identifying clearly which individual system components of a BWMS are likely to lead to human exposure to Active Substances, Relevant Substances and by-products. For each system component, including connecting piping, a description of such exposures needs to be provided, e.g. chemical storage, chemical application, processing of treated ballast water, ballast tank operations, including associated piping, as well as discharge operations and maintenance. The risk assessment should also include the risk reduction measures envisaged for all of the above-defined unit operations, i.e. stating clear Personal Protective Equipment (PPE) requirements for each step in the process.

7.2.3.3 Equipment failure and accident situations should be considered separately from conditions of normal operation.

7.2.3.4 In cases where an exposure/DNEL or exposure/DMEL ratio is not less than 1, then, to demonstrate that there is no unacceptable risk, the applicant should provide scientific justification, which may include potential risk mitigation measures.

7.3 Risks to the aquatic environment

7.3.1 The potential risks to the aquatic environment should be assessed for both Basic and Final Approval.

7.3.2 When no aquatic toxicity of the treated ballast water at discharge is found either through direct testing of the treated ballast water or if the estimated ratios between predicted concentrations of the Active Substance, components of Preparations or Relevant Chemicals, described in 6.3.3 and the respective PEC/PNEC ratios are less than 1, no further assessment of direct toxic effects to the aquatic environment is necessary.

7.3.3 In cases where a PEC/PNEC ratio is not less than 1, then, to demonstrate that there is no unacceptable risk, the applicant should provide scientific justification, which may include potential risk mitigation measures.

8 ASSESSMENT REPORT (G9: 4.3)

The Assessment Report referred to in section 4.3 of Procedure (G9) should be presented by the concerned Administration and should at least provide:

.1 an overview of the data and endpoints on which the risk characterization according to section 6 of Procedure (G9) is based, including a description of the quality of test reports;

.2 an assessment of risks to the safety of ships, human health (crew and the general public), the environment and resources in accordance with section 6 of Procedure (G9);

.3 if any monitoring has been conducted, a summary of the results of that monitoring, including information on the analytical methodology used, ship movements and a general description of the area monitored;

.4 a summary of the available data on environmental exposure and any estimates of environmental concentrations developed through the application of mathematical models, using all available environmental fate parameters, preferably those that were determined experimentally, along with an identification or description of the modeling methodology;

.5 an evaluation of the association between the ballast water management system making use of Active Substances or Preparations containing one or more Active Substances to comply with the Convention in question, the related adverse effects and the environmental concentrations, either observed or expected, based on the risk assessment and the effluent testing;

.6 a qualitative statement of the level of uncertainty in the evaluation referred to under the preceding paragraph; and

.7 a detailed description of risk management possibilities, e.g. for neutralization of the Active Substance in case of emergency or if PEC/PNEC at discharge > 1. These management measures are an integral part of the ballast water management system.

9 MODIFICATION TO THE APPLICATION

9.1 Manufacturers should report any modifications in names, including trade and technical name, composition or use of the Active Substances and Preparations in the ballast water management systems approved by the Organization, to the Member of the Organization. The Member of the Organization should inform the Organization accordingly (G9: 8.4.1).

9.2 Manufacturers intending to significantly change any part of a ballast water management system that has been approved by the Organization or the Active Substances and Preparations used in it should submit a new application (G9: 8.4.2).

10 FINAL APPROVAL

10.1 In accordance with paragraph 5.2.1 of Procedure (G9) for Final Approval, the discharge testing should be performed as part of the land-based type approval process using the treated ballast water discharge.

10.2 In order to obtain Final Approval in accordance with section 8.2 of Procedure (G9), the following criteria have to be met:

.1 Basic Approval has to be granted first;

.2 the Member of the Organization submitting an application should conduct the Type Approval tests in accordance with the Guidelines for approval of ballast water management systems (G8). The results should be conveyed to the Organization for confirmation that the residual toxicity of the discharge conforms to the evaluation undertaken for Basic Approval. This would result in Final Approval of the ballast water management system in accordance with regulation D-3.2. Active Substances or Preparations that have received Basic Approval by the Organization may be used for evaluation of ballast water management systems using Active Substances or Preparations for Final Approval (G9: 8.2.1) in accordance with the provisions of the framework "For determining when a Basic Approval granted to one BWMS may be applied to another system that uses the same Active Substance or Preparation";

.3 it is to be noted that from the Guidelines (G8), paragraph 2.3, on land-based testing, only the results of the residual toxicity tests should be included in the proposal for Final Approval in accordance with Procedure (G9). All other Guidelines (G8) testing remains for the assessment and attention of the Administration. Although Basic Approval under Procedure (G9) should not be a pre-requisite for Type Approval testing, as an Administration can regulate discharges from its own ships in its own jurisdiction, Basic Approval should still be required when the technology is used on ships trading in other States' jurisdiction (G9: 8.2.2);

.4 it should be noted that once a system has received Final Approval under Procedure (G9), the respective applicant should not have to retrospectively submit new data if there is a change in the Methodology agreed by the Organization (G9: 8.2.3);

.5 toxicity testing should be done on two types of water at two appropriate time intervals after treatment (preferably immediately after treatment and after a 24- or 48-hour interval), and organisms normally found in the selected types of water should be used in the toxicity testing. Dependent upon recommendations made at Basic Approval, in many cases only acute toxicity testing will be needed for Final Approval;

.6 all information related to Total Residual Oxidants (TROs), Total Residual Chlorine (TRC) and the chemicals included in such groupings, including their concentrations, should be provided to the GESAMP-BWWG for Final Approval when requested as part of its evaluation for Basic Approval;

.7 in addition to the basic data-set needed for the treated ballast water and the individual chemicals produced by the system – as identified in the Methodology for Basic Approval – a generated meaningful PEC/PNEC ratio would be required for Final Approval; and

.8 the application for Final Approval should address the concerns identified during the consideration for Basic Approval.

* *

APPENDIX 1

LETTER OF AGREEMENT

relating to a ballast water management system that makes use of Active Substances proposed for approval in accordance with regulation D-3, paragraph 2, of the Ballast Water Management Convention

Having received a satisfactory application on **[please insert the name of the ballast water management system]** produced by **[please insert the name of the manufacturer]**, the undersigned hereby

confirms, on behalf of the maritime Administration of **[please insert the name of the submitting country]**, that the application dossier regarding the ballast water management system that makes use of Active Substance(s) mentioned above is subject to the following conditions:

1. **Financial arrangements:** The fee paid in connection with this proposal for approval is based on the recovery of costs incurred by the International Maritime Organization (Organization) in respect of the services provided by the GESAMP-Ballast Water Working Group. Fees will be invoiced in up to three tranches:

   - US$50,000 immediately following receipt of this Letter of Agreement by the Organization;
   - an additional US$50,000 immediately following the deadline for submissions, if only one submission has been made; and/or
   - a final invoice to recover costs over the initial cost estimate, if required.

   All fees paid as described above will be retained in a Trust Fund established for this purpose.

2. **Intellectual Property Rights:** The Organization and the members of the GESAMP-Ballast Water Working Group will make every reasonable effort to prevent the disclosure of information which is clearly and prominently identified as being subject to an intellectual property right, subject to the condition that sufficient detail must be provided to the Marine Environment Protection Committee (MEPC) of the Organization to enable that body to perform its functions under resolution MEPC.169(57) and, in particular, to approve the proposed ballast water management systems that make use of Active Substances. In this respect the members of the Group will be required to sign a declaration concerning the confidentiality of information acquired as a result of their affiliation with the Group. In any case, neither the Organization nor the members of the GESAMP-Ballast Water Working Group can accept liability for damage or loss, which may result from disclosure of such information in the exercise of their responsibilities.

3. **Settlement of disputes:** The submitting Administration, the Organization, and the GESAMP-Ballast Water Working Group shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to the process established for reviewing Active Substances used for the management of ballast water or this Letter of Agreement, or the breach, termination or invalidity thereof. Where these parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then pertaining, or according to such other procedure as may be agreed between the parties. Any dispute, controversy or claim, which is not settled amicably, shall be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then pertaining. The place of the arbitration will be London, England.

4. **Privileges and immunities:** Nothing in or relating to the process established for reviewing Active Substances used for the management of ballast water or this Letter of Agreement shall be deemed a waiver, express or implied, of any of the privileges and immunities of the International Maritime Organization, including its officers, experts or subsidiary organizations or of the privileges and immunities to which the Administration is entitled under international law.

   Members of the GESAMP-Ballast Water Working Group, when performing functions in connection with the terms of reference of the Group, shall be considered to be experts of the Organization pursuant to Annex XII of the Convention on Privileges and Immunities of the Specialized Agencies of the United Nations.

Authorized signature on behalf of the maritime Administration:

_____

Typed/Printed name: _____

Title/Position/Organization/Country: _____

Date of signature: _____

Name and address _____

for fees invoicing: _____

_____

_____

* *

APPENDIX 2

TIMETABLE FOR ACTIVITIES RELATED TO THE GESAMP-BWWG MEETINGS

Timeline	Activity
28 weeks before MEPC	Deadline for submission of application dossiers and related documents to be reviewed by the GESAMP-BWWG
(8 weeks)	Preparation of the meeting, including circulation of any relevant information provided by other delegations
20 weeks before MEPC	GESAMP-BWWG meeting
(1 week)	Editing and completion of the draft report of the meeting
(3 weeks)	Review and approval of the report by the GESAMP including response/clarification by the working group
(1 week)	Administrations confirm that no confidential data are contained in the report
(1 week)	Produce the final report addressing the comments by the GESAMP
13 weeks before MEPC	Submission of the report of the meeting of the GESAMP-BWWG in accordance with the 13-week deadline (bulk documents) for MEPC

**

APPENDIX 3

MODEL DOCUMENT FOR THE ANNEX ON NON-CONFIDENTIAL DOSSIER OF AN APPLICATION FOR BASIC APPROVAL AND/OR FINAL APPROVAL OF A BALLAST WATER MANAGEMENT SYSTEM (BWMS)

1 INTRODUCTION

This section should include:

.1 a brief history of any previous applications; and

.2 the results of any previous evaluations with references to any pertinent documents;

2 DESCRIPTION OF THE SYSTEM

This section should include:

.1 a list of all the relevant parts of the BWMS, e.g. filtration, treatment (e.g. U.V. or electrolysis or chemicals), neutralization and any feedback controls;

.2 a schematic representation of the system showing the component parts; and

.3 a general description of how the BWMS works and how all the component parts are integrated.

3 CHEMICALS ASSOCIATED WITH THE SYSTEM

3.1 Chemical reactions associated with the system

This section should describe the anticipated chemical reactions associated with the particular system involved and residual chemicals expected to be discharged to the sea.

3.2 Identification of chemicals associated with the ballast water management system

3.2.1 This section should include all Active Substances (AS), Relevant Chemicals (RC) and any Other Chemicals (OC) potentially associated with the system either intentionally or as by-products resulting from the treatment.

3.2.2 A summary of all chemicals analysed in the treated ballast water should be presented in a table, as shown below, including those not actually detected. Where a chemical could not be detected, a less than value (< x mg/L) should be associated with it to indicate the detection limits of the analysis.

Chemical analysis of treated ballast water

Chemical	Concentration in treated ballast water (µg/L)	AS, RC or OC
A		
B		
C		
D		

3.3 For each chemical measured above the detection limits of the system (and above the control levels of untreated ballast water), a separate data sheet (as shown at the end of this appendix) should be included in the application where the chemical has not been evaluated by the GESAMP-EHS or the GESAMP-BWWG and listed in appendix 6 to this Methodology.

Table: Chemical analysis of treated ballast water in different salinities as reported by the applicant

Chemical	Detection limit (µg/L)	Brackish water			Seawater		
		Maximum value (µg/L)	Mean value (µg/L)	Standard deviation (µg/L)	Maximum value (µg/L)	Mean value (µg/L)	Standard deviation (µg/L)
A							
B							
C							
D							

3.4 Unless the applicant disagrees with these data, in which case the applicant should provide reasons for disagreeing and supported replacement data for consideration.

3.5 For the further risk assessment for human health and the environment, the Group selects only the substances that have been detected in a concentration above the detection limit from the table listing all of the potential by-products produced in ballast water. These substances should be considered the Relevant Chemicals for the BWMS. If the detection limit for a substance is determined to be unreasonably high, the substance will be included in the further risk assessment with a value corresponding to the detection limit.

Table: Selected Relevant Chemicals and the concentrations for further risk assessment (RA)

Relevant Chemicals	Concentration in ballast water used in the RA (µg/L)
A	
B	
C	

3.6 The operation of the BWMS is preferably highly automated. A compact description of the control system is to be provided.

4 CONSIDERATION OF CONCERNS EXPRESSED BY THE GROUP DURING ITS PREVIOUS REVIEW

This section should include a copy of each concern raised by the GESAMP-BWWG with an appropriate response from the applicant (valid in case an earlier submission was denied Basic Approval (BA) or Final approval (FA), or in case of an FA submission following a BA approval).

5 HAZARD PROFILE DATA AND EXPOSURE OF CHEMICALS ASSOCIATED WITH THE BWMS

5.1 This section should contain a summary of the hazards to mammals and the environment associated with each chemical associated with or generated by the BWMS. Such a summary should be shown in appendix 1 to this Methodology. Where possible, references have been added.

5.2 The hazards identified will be used to perform a risk assessment of the BWMS on the environment, the ships' crews and the general public.

5.3 In order to assist applicants in providing these summary data, the GESAMP Evaluation of Hazardous Substances Working Group (EHS) and the GESAMP-Ballast Water Working Group (BWWG) have evaluated some of the chemicals commonly associated with Ballast Water Management Systems (BWMS). This means that for the substances indicated in appendix 6, no additional properties on physico-chemistry, ecotoxicology and toxicology have to be submitted, unless the applicant has other, scientifically more relevant data available.

5.4 The reason for this approach is to:

.1 provide a consistent set of data for all applications;

.2 assist applicants in collating the data associated with their BWMS; and

.3 streamline the work of the GESAMP-BWWG in assessing applications.

5.5 The following endpoints should be recorded:

.1 The proposed PNEC based on the available ecotoxicological data, including the final assessment factor to establish the PNEC. This value will be used in the environmental risk assessment.

5.5.1 Predicted No Effect Concentrations (PNEC)

Table: PNEC values of Chemicals associated with the BWMS and included in the GESAMP-BWWG Database

Relevant Chemicals	Harbour	Near ship
	PNEC (µg/L)	PNEC (µg/L)
A		
B		
C		

Table: PNEC values of Chemicals associated with the BWMS, not included in the GESAMP-BWWG Database

Relevant Chemicals	Harbour			Near ship		
	AF	PNEC (µg/L)	Rule No.	AF	PNEC (µg/L)	Rule No.
A						
B						
C						

.1 The proposed DNEL and/or DMEL based on the available toxicological data, including the final assessment factor to establish the DNEL and/DMEL to be used in the human risk assessment.

5.5.2 Derived No Effect Levels (DNEL) and/or Derived Minimum Effect Level (DMEL)

Table: CMR properties for selected Relevant Chemicals

	Carcinogenic	Mutagenic	Reprotoxicity	CMR
A	Yes/No	Yes/No	Yes/No	Yes/No
B	Yes/No	Yes/No	Yes/No	Yes/No
C	Yes/No	Yes/No	Yes/No	Yes/No

Table: DNELs and DMELs to be used in the risk assessment for humans

Chemical	DNEL (mg/kg bw/d) Crew	DNEL (µg/kg bw/d) General public	DMEL (µg/kg bw/d)
A			
B			
C			

5.6 Exposure

5.6.1 In order to perform a risk assessment related to both the environment and those people who may be exposed to any chemicals associated with the BWMS, it is necessary to estimate the concentration of such chemicals in:

.1 the air space in the ship's ballast water tank;

.2 the atmosphere surrounding the ship;

.3 leakages and spills when operating the system; and

.4 in the harbour water.

5.6.2 It is recognized that there are various computer models which can be used to fulfil this requirement and that such models can produce differing results depending on a range of input parameters which can be used. So, in order to provide some standardization and a mechanism for comparing the various systems, it is recommended that applicants use the model of paragraph 5.6.3 associated with the standard inputs described in appendix 5 resulting in a Predicted Environmental Concentration for the Active Substance, all Relevant Chemicals and relevant disinfection by-products.

5.6.3 Predicted Environmental Concentration (PEC)

The Predicted Environmental Concentration (PEC) should be calculated using the MAMPEC-BW 3.0 model or latest available version with the appropriate environment definition and emission input. The results of these calculations should be used to estimate the risk to the crew, port State control, the general public and the environment. See the guidance in appendix 4 for the risk assessment for humans and appendix 5 for the risk assessment for the aquatic ecosystem.

Table: PEC from MAMPEC modelling results from the GESAMP-BWWG Model Harbour

Chemical name	PEC (µg/L)	
	Maximum	Near ship
A		
B		
C		

5.6.4 Concentration of Chemicals associated with the BWMS in the atmosphere

An inventory should be made of the ways humans (crew, port State control and the general public) may be exposed to Relevant Chemicals due to the ballasting and deballasting processes. Guidance to the potential exposure routes is given in appendix 4, together with calculation tools to estimate the worst-case exposure concentration. These resulting concentrations should be used in the risk assessment for humans and reported here.

Table: Resulting concentrations to be used in the risk assessment for humans

Chemical	Crew		General public	
	Concentration in tank (µg/L)	Concentration in air (mg/m^3)	Concentration MAMPEC (µg/L)	Concentration in air (mg/m^3)
A				
B				
C				

6 WHOLE EFFLUENT TESTING (WET) – (LABORATORY TEST FOR BASIC APPROVAL AND LAND-BASED TEST OR ON-BOARD TEST FOR FINAL APPROVAL)

This section should include:

.1 a description of the tests carried out; and

.2 a table of the results, e.g. as shown below:

Species	Species	Endpoint			Comments
		NOEC*		EC_{50}*	
Algae		50%		83%	
Crustacea		> 100%		> 100%	
Fish		> 100%		> 100%	

* The values indicated are examples.

7 RISKS TO SHIP SAFETY

This section covers damage to the structure of the ship which might be caused by various effects including:

.1 explosion;

.2 fire; and

.3 corrosion.

8 RISKS TO THE CREW

Risks to the crew may be assumed to be associated with:

.1 delivery, loading, mixing or adding chemicals to the BWMS;

.2 ballast water sampling;

.3 periodic cleaning of ballast tanks;

.4 ballast tank inspections; and

.5 normal work on deck.

These situations are covered in the guidance in appendix 4.

8.1 Mixing and Loading/Ballast water sampling/Periodic cleaning of ballast tanks

8.1.1 When considering various work operations, it should be assumed that the exposure routes of concern for the crew and/or port State workers will be inhalation and dermal. In this respect, it is assumed that the crew will be exposed by inhalation to the highest concentration of each chemical in the atmosphere above the treated ballast water at equilibrium and by dermal uptake to the highest concentration of each chemical in the treated ballast water. These approaches are described in appendix 4.

8.1.2 The result from the calculations may be presented as shown in the tables below:

Table: Crew, scenario 1: delivery, loading, mixing or adding chemicals to the BWMS

Chemical	AS concentration	Dermal exposure (mg/kg bw/d)	DNEL (mg/kg bw/d)	RCR
Al				
B				
C				

Table: Crew/Port State control, scenarios 2–5

Chemical	Scenario (mg/kg bw/d)		Aggregated exposure (mg/kg bw/d)	DNEL (mg/kg bw/d)	RCR
	Dermal	Inhalation			
A					
B					
C					

Table: Crew/Port State control, scenario: – DMEL approach

Chemical	Scenario (mg/kg bw/d)		Aggregated exposure (mg/kg bw/d)	DMEL (mg/kg bw/d)	RCR
	Dermal	Inhalation			
A					
B					
C					

9 RISKS TO THE GENERAL PUBLIC

Risks to the general public are most likely to occur as a result of:

.1 ingestion of seafood which has been exposed to chemical by-products in the treated ballast water; and

.2 swimming in seawater contaminated with treated ballast water where exposure may be via ingestion (accidental swallowing), inhalation and dermal contact.

9.1 The risk to the general public from the oral, dermal and inhalatory exposure of chemical by-products may be calculated according to the guidance in appendix 4.

Table: General public scenario: swimming and consumption of seafood

Chemical	Scenario 10.1.1 and 10.1.2 (µg/kg bw/d)				Aggregated exposure (µg/kg bw/d)	DNEL (µg/kg bw/d)	RCR
	Swimming			Consumption of seafood			
	Oral	Dermal	Inhalation	Oral			
A							
B							
C							

9.2 An indicative risk level may be used to calculate an indicative RCR regarding potential cancer risk. These values can be used to estimate a risk dose based on the probability of increased cancer incidence over a lifetime (10^{-6}) and may be regarded as a DMEL for the general public.

Table: General public scenario: swimming and consumption of seafood – DMEL approach

Chemical	Aggregated exposure (µg/kg bw/d)	DMEL (µg/kg bw/d)	Indicative RCR
A			
B			
C			

10 RISKS TO THE ENVIRONMENT

10.1 Assessment of Persistence (P), Bioaccumulation (B) and Toxicity (T)

Based on the half-life, BCF or Log Kow and the chronic NOEC values for each chemical (Procedure (G9), paragraph 6.4), the PBT properties of each chemical should be reflected in a table with the justification in parentheses as shown below:

Chemical by-product	Persistence (P) (Yes/No)	Bioaccumulation (B) (Yes/No)	Toxicity (T) (Yes/No)	PBT (Yes/No)
A	Yes/No	Yes/No	Yes/No	
B	Yes/No	Yes/No	Yes/No	
C	Yes/No	Yes/No	Yes/No	

10.2 Calculation of PEC/PNEC ratios

10.2.1 The ratio of PEC/PNEC is a measure of the risk that each chemical is deemed to present to the environment.

10.2.2 For each chemical the estimation of the PEC/PNEC ratio should be summarized as shown in the table below:

Table: PEC/PNEC ratios [according to the Group]

Chemical name	Maximum/Harbour			Near ship		
	PEC	PNEC	PEC/ PNEC	PEC	PNEC	PEC/ PNEC
	(µg/L)	(µg/L)	(-)	(µg/L)	(µg/L)	(-)
A						
B						
C						

11 ADDITIONAL HEADINGS

11.1 As part of the report to be made by the Group during its evaluations, the following parts also appear:

11.1.1 CONCLUSIONS AND RECOMMENDATIONS

11.1.1.1 Risks to ship safety

11.1.1.2 Risks to the crew and the general public

11.1.1.3 Risks to the environment

11.1.1.4 Recommendation

DATA ON EACH COMPONENT OF THE PREPARATION AND BY-PRODUCT PRODUCED IN BALLAST WATER

Chemical Name …..……..……

Where the applicant considers that it is not necessary to complete the data form for a given chemical, a full justification should be given (e.g. the ½-life of the chemical is only a few seconds and so will have disappeared by the time the ballast water is discharged into the sea).

2 EFFECTS ON AQUATIC ORGANISMS

2.1 Acute aquatic toxicity data

	Species	duration*-LC_{50} (mg/L)	Reference/comments/justification for missing data
Fish			
Crustacea			
Algae			

* The duration is given in hours (h) or days (d), e.g. 96h-LC_{50} or 7d-NOEC.

2.2 Chronic aquatic toxicity data

	Species	duration*-LC50 (mg/L) or duration*-NOEC (mg/L)	Reference/comments/justification for missing data
Fish			
Crustacea			
Algae			

* The duration is given in hours (h) or days (d), e.g. 96h-LC_{50} or 7d-NOEC.

2.3 Information on endocrine disruption

	Species	Information	Reference/comments/justification for missing data
Fish			
Crustacea			
Algae			

2.4 Sediment toxicity

	Species	Information	Reference/comments/justification for missing data
Fish			
Crustacea			
Algae			

2.5 Bioavailability/biomagnification/bioconcentration

	Value	Reference/comments/justification for missing data
Log Pow		
BCF		

2.6 Food web/population effects

2.6.1 A description of potential food web and population effects should be provided supported by a full justification.

3 MAMMALIAN TOXICITY

3.1 Acute toxicity

	Value	Species	Reference/comments/justification for missing data
Oral LD_{50} (mg/L)			
Dermal LD_{50} (mg/kg bw)			
Inhalation 4h-LC_{50} (mg/L)			

3.2 Corrosion/irritation

	Species	Method	Results (including scores where available)	Reference/comments/ justification for missing data
Skin				
Eye				

3.3 Sensitization

	Species	Method (e.g. Buehler, M&K)	Results (Sensitizer Y/N)	Reference/comments/ justification for missing data
Skin				
Inhalation				

3.4 Repeated-dose toxicity

Exposure route	
Exposure duration	
Exposure dose	
Species	
Method	
Results	
NOAEL	
NOEL	
Reference/comments/justification for missing data	

3.5 Development and reproductive toxicity

Exposure route	
Exposure duration	
Exposure dose	
Species	
Method	
Results	
NOAEL	
NOEL	
Reference/comments/justification for missing data	

3.6 Carcinogenicity

Exposure route	
Exposure duration	
Exposure dose	
Species	
Method	
Results	
NOAEL	
NOEL	
Reference/comments/justification for missing data	

3.7 Mutagenicity

	Method	Dose range	Results	Reference/ comments/ justification for missing data
Bacterial gene mutation				
Mammalian cytogenicity				
Mammalian gene mutation				

3.8 Carcinogenicity/mutagenicity/reproductive toxicity (CMR)

	Results	Reference/comments/ justification for missing data
Carcinogenicity		
Mutagenicity		
Reproductive toxicity		

4 ENVIRONMENTAL FATE AND EFFECT UNDER AEROBIC AND ANAEROBIC CONDITIONS

4.1 Modes of degradation (biotic and abiotic)

	Seawater or fresh water	Test duration	Results	Breakdown products	Reference/ comments/ justification for missing data
Hydrolysis at pH 5					
Hydrolysis at pH 7					
Hydrolysis at pH 9					
Biodegradation					
DT_{50}					

4.2 Partition coefficients

	Method	Results	Reference/comments/ justification for missing data
Log P_{OW}			
K_{OC}			

4.3 Persistence and identification of main metabolites

	Method	Results	Reference/comments/ justification for missing data
Persistence (d)			

4.4 Reaction with organic matter

4.5 Potential physical effects on wildlife and benthic habitats

4.6 Potential Residues in seafood

4.7 Any known interactive effects

5 PHYSICAL AND CHEMICAL PROPERTIES FOR THE ACTIVE SUBSTANCES, PREPARATIONS AND TREATED BALLAST WATER, IF APPLICABLE

Property*	Value	Reference/ comments/ justification for missing data
Melting point (°C)		
Boiling point (°C)		
Flammability (flashpoint for liquids; °C)		
Density (20°C; kg/m^3)		
Vapour pressure (Pa at 20°C)		
Relative vapour density (expressed as a ratio by that of air as 1.293 kg/m^3 at 0°C and 10^5 Pa)		
Water solubility (mg/L, temp; effect of pH)		
pH in solution (under the intended concentration for AS)		
Dissociation constant (pK_a)		
Oxidation-reduction potential (V)		
Corrosivity to material or equipment (for AS see paragraph 3.6.9)		
Reactivity to container material (only for AS, which needs storage on board)		
Auto-ignition temperature, also flash point if applicable (°C)		
Explosive properties (narrative)		
Oxidizing properties (narrative)		
Surface tension (N/m)		

* If units are indicated for the property, then these should be considered the preferred unit.

→

←

Property*	Value	Reference/ comments/ justification for missing data
Viscosity Viscosity (Pa·s), Kinetic viscosity (m^2/s) is also accepted		
Thermal stability and identity of breakdown products (narrative)		
Other physical or chemical properties (narrative)		

6 OTHER INFORMATION

6.1 Analytical methods for measuring the concentration at environmentally relevant concentrations

Method	
Applicability	
Sensitivity	
Reference/comments/justification for missing data	

6.2 Material Safety Data Sheet provided (Yes/No)

6.3 GHS classification .....

6.4 Risk characterization

Persistent (y/n)	Bioaccumulative (y/n)	Toxic (y/n)	Reference/comments/ justification for missing data

* *

APPENDIX 4

HUMAN RISK ASSESSMENT OF BALLAST WATER CHEMICALS

1 INTRODUCTION

1.1 In risk characterization for human health, the procedure is to compare the exposure levels to which the target groups are exposed or likely to be exposed with those levels at which no toxic effects from the chemicals are expected to occur. There are normally four stages when carrying out a quantitative risk assessment:

.1 **Hazard identification** – what are the substances of concern and what are their effects?

.2 **Dose (concentration) – response (effect) relation** – what is the relationship between the dose and the severity or the frequency of the effect?

.3 **Exposure assessment** – what is the intensity, and the duration or frequency of exposure to an agent.

* If units are indicated for the property, then these should be considered the preferred unit.

.4 **Risk characterization** – how to quantify the risk from the above data.

1.2 It is proposed to apply a tiered approach when assessing the risk of the chemicals associated with the BWMS.

1.3 In the first tier, the level of exposure to the substance below which no adverse effects are expected to occur should be derived for the relevant systemic effects. This level of exposure above, which humans should not be exposed to, is designated as the Derived No Effect Level (DNEL). Risks are regarded to be controlled when the estimated exposure levels do not exceed the predicted no effect levels (DNEL).

1.4 A DNEL is a derived level of exposure because it is normally calculated on the basis of available dose descriptors from animal studies such as No Observed Adverse Effect Levels (NOAELs) or benchmark doses (BMDs).

1.5 The DNEL can be considered as an "overall" No-Effect-Level for a given exposure (route, duration, frequency), accounting for uncertainties/variability in these data and the human population exposed by using appropriate Assessment Factors (AFs).

1.6 If an unacceptable level of risk is identified for any of the scenarios in the first tier, a refinement of the exposure assessment and/or the assessment factors might be performed in the second tier giving special attention to route-specific contributions and protection measures.

1.7 In order to determine the risks with chemicals associated with the treatment of ballast water, it is necessary to determine several parameters:

.1 concentration of each chemical in the ballast water tank (and in the air phase above the water);

.2 concentration of chemicals after discharging in the sea;

.3 concentration of chemicals which may be transferred from the aquatic environment into the atmosphere; and

.4 potential uptake of chemicals by humans through the various routes of exposure.

1.8 For the worker exposure situation in the ballast water tank (while performing sampling or cleaning), it is important to estimate the air concentrations in the ballast tank. The concentration of each chemical in the atmosphere above the water may be calculated using the Henry's Law Constant.

1.9 For the exposure situation regarding the general public (whilst swimming in the sea or consuming seafood), the calculated concentration of each chemical in the discharged treated ballast water needs to be used. These can be determined using environmental models and the MAMPEC-BW model version 3.0.1 or latest available version written for this purpose is the one preferred. It is normal practice to use the highest values obtained from this model which is the concentration anticipated in the harbour area.

1.10 It is important to note that the methodologies described in this document generally apply to DNELs of chemicals with a systemic and threshold related property, and do not apply to chemicals producing local effects, such as irritation. However, in some cases it is considered appropriate to derive a DNEL for a local effect when a reliable NOAEL is available. For chemicals with a non-threshold effect (i.e. cancer), a DMEL should be used.

1.11 No account has been taken of the naturally occurring background levels of contaminants in seawater, which, it is recognized, will be different in different parts of the world.

1.12 The approach described in this documentation takes into account the EU REACH guidance described in ECHA Guidance on information requirements and chemical safety assessment.

2 HUMAN EXPOSURE ASSESSMENT

2.1 Occupational

2.1.1 The exposure assessment is carried out through an evaluation of different exposure scenarios. An exposure scenario is the set of information and/or assumptions that describes how the contact between the worker and the substance takes place. It is based on the most important characteristics of the substance in view of occupational exposure, e.g. the physico-chemical properties, pattern of use, processes, tasks and controls. An exposure scenario will therefore describe a specific use of the treatment product with a set of specific parameters. Exposure estimates are intended to be used as a screening tool. The following situations have been identified as likely exposure scenarios for workers:

Table 1. Summary of occupational exposure scenarios

Operations involving the crew and/or port state workers			
Operation	**Exposure**	**Frequency/duration/ quantity**	**Approach described in:**
Delivery, loading, mixing or adding chemicals to the	Potential dermal exposure and inhalation from	Solids, dermal: scenario to be developed Liquids, dermal: 0.05-	2.1.2
BWMS	leakages and spills.	0.1 mL/container handled Gases/vapours/dusts, inhalation: scenario to be developed	
Ballast water sampling at the sampling facility	Inhalation of air released	2 hours/day for 5 days/week; 45 weeks/year	2.1.3.1
	Dermal exposure to primarily hands	2 hours/day for 5 days/week; 45 weeks/year	2.1.3.4
Periodic cleaning of ballast tanks	Inhalation of air in the ballast water tank	8 hours/day for 5 days/week; 1 event/year	2.1.4.1
	Dermal exposure to the whole body	8 hours/day for 5 days/week; 1 event/year	2.1.4.3
Ballast tank inspections	Inhalation of air in the ballast water tank	3 hours/day for 1 day/month	2.1.5
Normal operations carried out by the crew on BWMS			
Normal work on deck unrelated to any of the above	Inhalation of air released from vents	1 hour/day for 6 months/year	2.1.6

Note: Whilst the above situations have been identified as typical exposure scenarios, it is recognized that there will be other situations when exposure of workers may be greater or less and due consideration should be given to such situations.

2.1.2 Delivery, loading, mixing or adding chemicals to the BWMS

2.1.2.1 There is potential for exposure to chemical substances during transfer of concentrated formulations in containers or within closed systems. It is considered that the risks are dealt with through the use of appropriate chemical protective clothing, in particular gloves. The applicant should provide details of the intended methods to be used to transfer Active Substances, Preparations or Other Chemicals, e.g. neu-

tralizers, to the on-board storage and propose the appropriate personal protective equipment to prevent exposure arising from any loss of containment or through contact with contaminated plant and equipment.

2.1.2.2 Dilution of concentrated chemical products is often referred to as mixing and loading. On smaller vessels this process may be performed manually. Exposure through inhalation is considered unlikely for non-volatile or water-based chemical formulations. Potential dermal exposure of the hands can be estimated by several available models. It is recommended to use the UK Predictive Operator Exposure Model (POEM) for this estimation. In this model, the daily level of exposure during the handling of containers depends on the properties of the container (capacity and diameter of the opening) and the number of containers handled per day. Containers with narrow openings (< 45 mm) are not considered for this scenario.

Principal equation:

$$Dose = (1 - f_{RMM}) \cdot \frac{C \cdot N \cdot E \cdot f_{derm} \cdot f_{pen}}{BW}$$

Dose = skin exposure (mg/kg bw/d)

f_{RMM} = risk mitigation factor (tier 1 = 0, tier 2 = 0.95)

C = concentration of Active Substance (mg/L)

N = number of containers handled, to be determined according to the total volume needed for the specific BWMS (d^{-1})

E = contamination per container handled (tier 1 = 0.1 mL, tier 2 = 0.05 mL)

f_{derm} = dermal absorption factor (default = 1)

f_{pen} = penetration factor (default = 1)

BW = body weight (default = 60 kg)

The tier 1 assessment is based on the handling of containers with an opening diameter of 45 mm and a volume of 10 L. For this case, UK POEM predicts a hand exposure of 0.1 mL fluid per container handled. The number of containers handled depends on the total volume of liquid that needs to be transferred. The tier 2 assessment is based on the handling of containers with an opening diameter of 63 mm and a volume of 20 L. For this case, UK POEM predicts a hand contamination of 0.05 mL for each container. The total volume handled should be the same as in tier 1, i.e. the number of containers handled is half of that in tier 1. The exposure estimation can be further refined by the use of substance-specific values for the dermal absorption factor or the penetration factor, if available. Exposure can be reduced by the use of gloves. According to UK POEM, suitable gloves will reduce exposure to 5% of the original value. This value is used as a default for tier 2.

2.1.2.3 On larger vessels, transfer of chemicals will more likely occur through closed transfer systems. These systems do not necessarily result in reduced levels of operation exposure. The connection and removal of adaptors may result in similar levels of exposure as those from open pouring operations. Therefore, calculation of exposure by the above equation is recommended also for these systems.

2.1.2.4 Measures to safeguard installations against unintended release of chemicals should be discussed under "Risks to the safety of the ship" (see chapter 7.1 of the Methodology).

2.1.3 Ballast water sampling

2.1.3.1 There is a potential risk for inhalation of chemicals that have evaporated into the air phase while performing the task of taking samples of the ballast water from the sampling facility. The worst concentration of chemicals in the air may theoretically be calculated using the Henry's Law Constant in the equation presented below:

$$C_{air} = \frac{H}{R \cdot T} \cdot C_{water}$$

where:

C_{air} = concentration in air (mg/m^3)
H = Henry's Law Constant (Pa m^3/mole)
R = gas constant (8.314 Pa m^3/mole K)
T = absolute temperature (K)
C_{water} = measured concentration in ballast water (µg/L)

2.1.3.2 If the applicant proposes that the sampling facility be placed in the engine room, a dilution factor of 100 may be introduced to estimate the concentration in the air surrounding test facilities. This is based on the assumption that any air released from the sampling facilities will be diluted by the surrounding air

2.1.3.3 Once a concentration of a volatile component has been estimated, a simple tier 1 exposure assessment can be performed.

$$Dose_{Tier1} = \frac{C_{air} \times ET \times IR}{BW}$$

where:

$Dose_{Tier1}$ = inhaled dose (mg/kg bw/d)
C_{air} = concentration of volatile component in air (mg/m^3)
ET = exposure time (2 h/d)
IR = inhalation rate (default = 1.25 m^3/h)
BW = body weight (default = 60 kg)

2.1.3.4 There is also a potential risk for dermal uptake of chemicals from the ballast water while taking samples from the sampling facility. The dermal uptake may be calculated using the equation below:

$$U_{sd} = \frac{A_{hands} \cdot TH_{dermal} \cdot C_{water} \cdot BIO_{derm}}{BW}$$

where:

U_{sd} = dermal uptake (mg/kg bw/d)
A_{hands} = surface area of two hands (0.084 m^2)
TH_{dermal} = thickness of the product area on the skin (0.0001 m)
C_{water} = concentration of chemical in treated ballast (µg/L)
BIO_{derm} = dermal bioavailability (default = 1)
BW = body weight (default = 60 kg)

2.1.3.5 The aggregated uptake, that is the sum of the inhaled dose and the dermal dose, is then compared with the DNEL to assess whether the risk is acceptable or not.

2.1.3.6 If the tier 1 risk assessment indicates an unacceptable risk, a tier 2 exposure assessment can be performed by averaging the short-term daily exposure over an extended period of time, in accordance with a methodology developed by the U.S. EPA[1]. For this purpose, employment duration of 20 years is assumed.

[1] U.S. Environmental Protection Agency, 2002. Supplemental guidance for developing soil screening levels for superfund sites. http://www.epa.gov/superfund/health/conmedia/soil/pdfs/ssg_main.pdf

where:

$$Dose_{Tier2} = (1 - f_{RMM}) \frac{C_{air} \times IR \times ET \times EF \times ED}{BW \times AT}$$

$Dose_{Tier2}$ = inhaled dose (mg/kg bw/d)
f_{RMM} = risk mitigation factor
C_{air} = concentration of volatile component in air (mg/m^3)
IR = inhalation rate (default = 1.25 m^3/h)
ET = exposure time (2 h/d)
EF = exposure frequency (225 d/y)
ED = exposure duration (20 y)
BW = body weight (default = 60 kg)
AT = averaging time (7,300 d (= exposure duration) for non-carcinogenic effects; 25,550 d (= life expectancy) for carcinogenic effects)

The dermal exposure is modified in an analogous manner.

2.1.3.7 For further refinement, the effect of risk mitigation measures may be taken into account using a system-specific risk mitigation factor.

2.1.4 Periodic cleaning of ballast water tanks

2.1.4.1 In this scenario a worker works in the emptied ballast tank, where he may be exposed to volatile components arising from treatment of the ballast water that have remained in the tank atmosphere after discharge of the treated ballast water. The concentration of chemicals in the air phase may be calculated in the same manner as in 2.1.3.1. A dilution factor of 10 is introduced based on the assumption that the ballast tank was previously filled to 90 percent capacity and so the air from the headspace will be diluted as the ballast water is discharged and fresh air is drawn in.

2.1.4.2 Once a concentration of a volatile component has been estimated, the tier 1 exposure assessment can be performed as described in 2.1.3.3, using an exposure time of 8 hours/day (see table 1).

2.1.4.3 The dermal uptake of chemicals from the sediment and sludge in the ballast tank may be calculated in the same manner as in 2.1.3.4 taking into account possible exposure to more parts of the body apart from the hands.

2.1.4.4 For risk assessment, the aggregated exposure is calculated according to 2.1.3.5.

2.1.4.5 If necessary, a tier 2 exposure assessment can be performed as described in 2.1.3.6, using an exposure frequency of 5 days/year (see table 1).

2.1.4.6 For this scenario effects of risk mitigation measures may be taken into account as described in the following. The data underlying the UK POEM model suggest that for higher levels of challenge, it is reasonable to assume that impermeable protective coveralls provide 90% protection against aqueous challenge. Protective gloves, for this type of work, are considered to always have the potential to get wet inside and the high-end default value is used as a measure of hand exposure even for the tier 2 assessment (exposure occurs owing to water entering via the cuff). For boots, a lower default value may be selected to represent the worker wearing appropriate impermeable boots.

2.1.5 Ballast tank inspections

2.1.5.1 In this scenario a crew member or a port state inspector enters the emptied ballast tank and may be exposed to volatile components arising from treatment of the ballast water. The concentration of chemicals in the air phase may be calculated in the same manner as in 2.1.3.1, using a dilution factor of 10 to account for the dilution by fresh air drawn into the emptied ballast tank.

2.1.5.2 Once a concentration of a volatile component has been estimated, the tier 1 exposure assessment

can be performed as described in 2.1.3.3. Exposure time in this scenario is 3 hours/day (see table 1).

2.1.5.3 No dermal exposure is assumed for this scenario, and the calculated inhaled dose can be directly used for risk assessment.

2.1.5.4 If necessary, a tier 2 exposure assessment can be performed as described in 2.1.3.6, using an exposure frequency of 12 days/year (see table 1).

2.1.5.5 For further refinement, the effect of system-specific risk mitigation measures may be taken into account.

2.1.6 Crew carrying out normal work on deck unrelated to any of the above

2.1.6.1 Exposure in this scenario is through inhalation of air released from the air vents on deck. The concentration of chemicals in the atmosphere surrounding the air vents may be calculated as detailed in 2.1.3.1 and 2.1.3.3, taking into account a dilution factor of 100 for the dilution by the surrounding atmosphere.

2.1.6.2 Once a concentration of a volatile component has been estimated, the tier 1 exposure assessment can be performed as described in 2.1.3.3. Exposure time in this scenario is 1 hour/day (see table 1).

2.1.6.3 No dermal exposure is assumed for this scenario, and the calculated inhaled dose can be directly used for risk assessment.

2.1.6.4 If necessary, a tier 2 exposure assessment can be performed as described in 2.1.3.6, using an exposure frequency of 180 days/year (see table 1).

2.1.6.5 For further refinement, the effect of system-specific risk mitigation measures may be taken into account.

2.2 General public

2.2.1 Indirect exposure of humans via the environment where treated ballast water is discharged may occur by consumption of seafood and swimming in the surrounding area.

2.2.2 The following situations have been identified as likely exposure scenarios for the general public:

Table 2: Summary of exposure scenarios for the general public

Situations in which the general public might be exposed to treated ballast water containing chemical by-products			
Situation	**Exposure**	**Duration/quantity**	**Approach described in:**
Recreational activities in the sea	Inhalation of chemicals partitioning into the air above the sea	5 events of 0.5 hours/day for 14 days of the year	2.2.3.1
	Dermal exposure to chemicals whilst swimming in the sea	5 events/day for 14 days of the year	2.2.3.2
	Swallowing of seawater contaminated with treated ballast water	5 events of 0.5 hours/day for 14 days of the year	2.2.3.3
Eating seafood exposed to treated ballast water	Oral consumption	Once or twice/day equivalent to 0.188 kg/day	2.2.4
Aggregated exposure (through swimming and consumption of seafood)			2.2.5

Note: Whilst the above situations have been identified as typical worst-case exposure scenarios, it is recognized that there will be other situations when exposure of the general public may be greater or less and due consideration should be given to such situations.

In addition, the consumer exposure (general public) is normally assessed as chronic/lifetime risk in order to protect the most vulnerable population groups taking also into account that they would not use protective equipment when exposed to chemicals.

2.2.3 Recreational activities (swimming) in the sea

2.2.3.1 Inhalation of chemicals partitioning into the air above the sea

2.2.3.1.1 Exposure in this scenario is through inhalation of air above the sea while swimming. The concentration of chemicals in the air may be calculated while using the Henry's Law Constant as already described in 2.1.3.1. However in this case the concentration in the water is the PEC harbour value as calculated by MAMPEC, and taking into account a dilution factor of 100 (due to wind, turbulence and insufficient time for the chemical to reach equilibrium).

2.2.3.1.2 The inhaled dose may be estimated using the equation below, while taking into account various assumptions (number of swims, etc.):

$$U_{si} = \frac{C_{air} \cdot IR \cdot n \cdot D \cdot BIO_{inh}}{BW}$$

where:

U_{si} = inhalation intake of chemical during swimming (mg/kg bw/d)

C_{air} = concentration in air (mg/m^3)

IR = inhalation rate – light activity assumed (1.25 m^3/h)

n = number of swims per day (5/d)

D = duration of each swim (0.5 h)

BIO_{inh} = fraction of chemical absorbed through the lungs (1)

BW = body weight (default = 60 kg)

2.2.3.2 *Dermal exposure to chemicals whilst swimming in the sea*

Exposure in this scenario is via dermal uptake of chemicals when swimming, while using the following equation:

$$U_{sd} = \frac{C_w \times TH_{dermal} \times n_{swim} \times A_{skin} \times BIO_{dermal}}{BW}$$

where:

U_{sd} = dermal uptake per day during swimming (mg/kg bw/d)
C_w = concentration in the water, i.e. PECMAMPEC (µg/L)
TH_{dermal} = thickness of the product layer on the skin (0.0001 m)
ns_{wim} = number of events (5/d)
A_{skin} = surface area of whole body being exposed to water (1.94 m^2)
BIO_{dermal} = bioavailability for dermal intake (default= 1)
BW = body weight (kg)

2.2.3.3 *Swallowing of seawater contaminated with treated ballast water*

The oral uptake via swimming is calculated according to the following:

$$U_{so} = \frac{C_w \cdot IR_{swim} \cdot n_{swim} \cdot Dur_{swim} \cdot BIO_{oral}}{BW}$$

where:

U_{so} = amount of chemical swallowed (µg/kg bw/d)
C_w = concentration in the water, i.e. PECMAMPEC (µg/L)
IR_{swim} = ingestion rate of water while swimming (0.025 L/h)
n_{swim} = number of swims per day (5/d)
Dur_{swim} = duration of each swim (0.5 h)
BIO_{oral} = bioavailability for oral intake (default = 1)
BW = body weight (default = 60 kg)

2.2.4 Eating seafood exposed to treated ballast water

2.2.4.1 The concentration of chemicals in the seafood that is being consumed is calculated in this way:

$$C_{fish} = BCF \cdot PEC_{mampec}$$

where:

C_{fish} = concentration in fish (µg/kg)
BCF = bioconcentration factor (L/kg)
PEC_{mampec} = concentration of chemical in water derived from MAMPEC (µg/L)

2.2.4.2 While taking into account the assumption that people in the area only eat fish that is being caught locally (worst-case scenario), the daily intake may be calculated in the following way:

$$U_{fish} = \frac{QFC \cdot C_{fish} \cdot BIO_{oral}}{BW}$$

where:

U_{fish} = uptake of chemical from eating fish (µg/kg bw/d)
QFC = quantity of fish consumed/day (= 0.188 kg/d (FAO, Japan))
C_{fish} = concentration of chemical in fish (µg/kg)
BIO_{oral} = bioavailability for oral intake (default = 1)
BW = body weight (default = 60 kg)

2.25 Aggregated exposure (through swimming and consumption of seafood)

The total exposure to the general public whilst swimming in the sea and eating fish is the sum of the amount of chemical absorbed through eating fish plus the oral intake, dermal absorption and inhalation absorption whilst swimming.

Swimming (inhalation)	:	µg/kg/d
Swimming (dermal)	:	µg/kg/d
Swimming (oral)	:	µg/kg/d
Eating fish	:	µg/kg/d
Total	:	µg/kg/d

Note: Make sure all values are in the same units.

2.2.6 Concluding remarks

2.2.6.1 It should be noted that whilst the above situations have been identified as typical worst-case exposure scenarios, it is recognized that there will be other situations when exposure of the general public may be greater or less. Due consideration should be given to such situations.

2.2.6.2 In addition, the consumer exposure (general public) is normally assessed as chronic/lifetime risk in order to protect the most vulnerable population groups taking also into account that they would not use protective equipment when exposed to chemicals.

3 CALCULATION OF DERIVED NO-EFFECT LEVELS (DNELS)

3.1 The next step of the risk assessment process includes the definition of toxicologically significant endpoints for comparison with the calculated aggregated exposure doses. These endpoints, for example No Observed Adverse Effect Levels (NOAELs), Lowest Observed Adverse Effect Levels (LOAELs) or Benchmark Doses (BMDs) from experimental animal studies, are then further transformed to Derived No-effect Levels (DNELs) or Derived Minimal Effect Levels (DMELs) for the characterization of toxicological risks to humans.

3.2 The DNEL can be considered as an 'overall' No-Effect-Level for a given exposure (route, duration, frequency). Uncertainties/variability in these data and the human population exposed are taken into account by using appropriate Assessment Factors (AFs) according to this equation:

$$DNEL = \frac{Dose_{descriptor}}{Assessment\ Factor}$$

4 DNELS FOR THE WORKER POPULATION

4.1 For the exposure at the workplace, the following DNELs may be calculated:

.1 DNEL, short-term exposure (mg/kg bw): the dose descriptor might be an LD50 from an oral or dermal study or an LC50 from an inhalation study.

.2 DNEL, long-term exposure (mg/kg bw/d): the dose descriptor might be a NOAEL or LOAEL from a sub-acute, sub-chronic or chronic oral or dermal study or a NOAEC or LOAEC from an inhalation study.

4.2 It is also possible to derive DNELs for local effects. This is relevant for instance for corrosive/irritant substances that can produce immediate severe effects at the first site of contact (skin, eyes and/or respiratory tract).

5 DNELS FOR THE GENERAL PUBLIC

5.1 The exposure of the general public is normally assessed as chronic/lifetime risk in order to protect the most vulnerable population groups, taking also into account that they would not use protective equipment when exposed to chemicals.

5.2 Therefore, for the exposure of the general public via swimming or consumption of seafood, only one DNEL is calculated:

.1 DNEL, general public: (mg/kg bw/d): the dose descriptor might be a NOAEL or LOAEL from a sub-acute, sub-chronic or chronic oral or dermal study or a NOAEC or LOAEC from an inhalation study.

6 DNEL CALCULATION FROM MAMMALIAN TOXICOLOGY ENDPOINTS

6.1 The DNEL may be calculated in accordance with the following equation:

$$DNEL = \frac{Dose_{descriptor} \cdot CF_{dr}}{ASF \cdot OSF \cdot ISF \cdot ESF \cdot SF_{dur} \cdot CF_{abs}}$$

where:

$Dose_{descriptor}$	=	see 6.3
CFdr	=	experimental dosing regime, see 6.4
ASF	=	interspecies allometric factor, see 6.5
OSF	=	other interspecies scaling factor, see 6.6
ISF	=	intraspecies scaling factor, see 6.7
ESF	=	observed effect scaling factors, see 6.8
SF_{dur}	=	duration scaling factors, see 6.9
CF_{abs}	=	differential absorption factors, see 6.10

6.2 It should be noted that the DNEL is only appropriate for chemicals which cause a threshold systemic effect and is not appropriate for such effects as carcinogenicity for which a **Derived Minimal Effect Level (DMEL)** should be determined (see 7).

6.3 Dose descriptor

6.3.1 If the dose descriptor is a NOAEC or LOAEC from an inhalation study, expressed e.g. as mg/m^3, the internal exposure, expressed as mg/kg bw/d, can be calculated using the standard respiratory volume (sRV) of the test species:

$$NOAEL = \frac{NOAEC}{sRV_{animal}}$$

For the rat the sRV is 1.15 m^3/kg bw/d

For the mouse the sRV is 1.03 m^3/kg bw/d

6.4 Experimental dosing regime (CFdr)

6.4.1 This factor is needed to correct the dose value when the dosing regime in an experimental animal study differs from the exposure pattern anticipated for the human population under consideration.

For example:

.1 Starting NOAEL/NOAEC adjusted for treatment schedule (if dosing 5 days/week then a factor of 5/7 is applied)

6.5 Interspecies Allometric Scaling Factor (ASF)

6.5.1 Allometric scaling extrapolates doses according to an overall assumption that equitoxic doses (expressed in mg/kg/d) are related to, though not directly proportional to, the body weight of the animals concerned.

6.5.2 The following Allometric Scaling Factors are recommended for use in determining DNELs:

Species	Body Weight (kg)	ASF
Rat	0.25	4
Mouse	0.03	7
Hamster	0.11	5
Guinea pig	0.80	3
Rabbit	2.00	2.4
Monkey	4.00	2
Dog	18.00	1.4

6.6 Other Interspecies Scaling Factor (OSF)

6.6.1 If no substance-specific data are available, the standard procedure for threshold effects would be, as a default, to correct for differences in metabolic rate (allometric scaling) and to apply an additional factor of 2.5 for other interspecies differences, i.e. toxicokinetic differences not related to metabolic rate (small part) and toxicodynamic differences (larger part). In case substance-specific information shows specific susceptibility differences between species, which are not related to differences in basal metabolic rate, the default additional factor of 2.5 for "remaining differences" should be modified to reflect the additional information available.

6.7 Intraspecies scaling factor for the general population (ISF_{gp}) and workers (ISF_w)

6.7.1 Humans differ in sensitivity to exposure to toxic substances owing to a multitude of biological factors such as genetic polymorphism, affecting e.g. toxicokinetics/metabolism, age, gender, health and nutritional status. These differences, as the result of genetic and/or environmental influences, are greater in humans than in the more uniform inbred experimental animal population. Therefore, "intraspecies" in this context refers only to humans, which are divided into the following groups:

.1 **workers**, which are considered to be reasonably fit and of working age. As a result, the variation in the effect of a chemical on this group is considered to be relatively small, hence:

.1 the scaling factor for **workers (ISF_W)** = 5

.2 **the general population**, which are considered to include children, the elderly as well as the unfit and unwell. As a result, the variation in the effect of a chemical on this group is considered to be greater than that of workers, hence:

.1 the scaling factor for the **general population (ISF_{gp})** = 10

6.8 Observed effect scaling factors (ESF)

6.8.1 For the dose-response relationship, consideration should be given to the uncertainties in the dose descriptor (NOAEL, benchmark dose) as the surrogate for the true no-adverse-effect-level (NAEL), as well as to the extrapolation of the LOAEL to the NAEL (in cases where only a LOAEL is available or where a LOAEL is considered a more appropriate starting point).

6.8.2 The size of an assessment factor should take into account the dose spacing in the experiment (in recent study designs generally spacing of 2-4 fold), the shape and slope of the dose-response curve, and the extent and severity of the effect seen at the LOAEL.

6.8.3 When the starting point for the DNEL calculation is a LOAEL, it is suggested to use an assessment factor of 3. However, the benchmark dose (BMD) approach is, when possible, preferred over the LOAEL-NAEL extrapolation.

6.9 Duration scaling factors (SF_{dur})

6.9.1 In order to end up with the most conservative DNEL for repeated dose toxicity, chronic exposure is the 'worst case'. Thus, if an adequate chronic toxicity study is available, this is the preferred starting point and no assessment factor for duration extrapolation is needed. If only a sub-acute or sub-chronic toxicity study is available, the following default assessment factors are to be applied, as a standard procedure:

Duration	Scaling Factor (SF_{dur})
Sub-chronic to chronic	2
Sub-acute to chronic	6
Sub-acute to sub-chronic	3

"sub-acute" usually refers to a 28 day study

"sub-chronic" usually refers to a 90 day study

"chronic" usually refers to a 1.2-2 year study (for rodents)

6.10 Differential Absorption Factors (CF_{abs})

6.10.1 It is recognized that route-to-route extrapolation is associated with a high degree of uncertainty and should be conducted with caution relying on expert judgement.

6.10.2 For simplicity 100% absorption for the oral and the inhalation route for animals and humans is assumed. On the assumption that, in general, dermal absorption will not be higher than oral absorption, no default factor (i.e. factor 1) should be introduced when performing oral-to-dermal extrapolation.

7 CALCULATION OF DMELS – HOW TO DEAL WITH NON-THRESHOLD CARCINOGENS?

7.1 Background

According to Procedure (G9), paragraph 5.3.12, the effect assessment of the Active Substances, Prepara-

tions and Relevant Chemicals should include a screening on carcinogenic, mutagenic and endocrine disruptive properties. If the screening results give rise to concerns, this should give rise to a further assessment.

7.2 The Linearized approach and the Large Assessment Factor approach

7.2.1 Carcinogens can have a threshold or non-threshold mode of action. When it comes to the threshold carcinogens these can be assessed by using a DNEL approach, however, in the case of the non-threshold carcinogens (i.e. with mutagenic potential) a different approach to risk assessment is recommended.

7.2.2 As a general rule, exposure in the workplace must be avoided or minimized as far as technically feasible. In addition, a risk for the general public from secondary exposure to a non-threshold carcinogenic substance is also unacceptable. However, calculation of an exposure level corresponding to a defined low risk is possible based on a semi-quantitative approach, i.e. a derived minimal effect level (DMEL). In contrast to a DNEL, a DMEL does not represent a safe level of exposure. It is a risk-related reference value that should be used to better target risk management measures.

7.2.3 At the present status of knowledge there are two methodologies which can be applied for deriving a DMEL. The "**Linearized**" approach essentially results in DMEL values representing a lifetime cancer risk considered to be of very low concern and the "**Large Assessment Factor**" approach similarly results in DMEL values representing a low concern from a public health point of view. If data allow, more sophisticated methodologies for deriving a DMEL may be applied. The choice of such alternative methodologies should be justified.

7.2.4 Cancer risk levels between 10^{-4} to 10^{-6} are normally seen as indicative tolerable risk levels when setting DMELs. Where these values are available from internationally recognized bodies, they can be used to set DMELs for risk assessment purposes.

8 RISK CHARACTERIZATION

8.1 General approach

8.1.1 The Risk Characterization Ratios (RCR) compares the exposure levels to various DNELs or DMELs. The RCR is calculated according to the following formula:

$$RCR = \frac{Exposure}{DNEL / DMEL}$$

8.2 Occupational health risks

8.2.1 While considering ballast water sampling and tank cleaning operations, it should be assumed that the exposure routes of concern for Port State control officers and the crew will be inhalation and dermal exposure. The assumption being that the exposure will include inhalation to the highest concentration of each chemical in the atmosphere above the treated ballast water at equilibrium and the dermal uptake to the highest concentration of each chemical in the treated ballast water.

8.2.2 In the other two scenarios, ballast tank inspection and normal work on deck, only inhalation is taken into consideration.

8.3 Health risks for the general public

8.3.1 In the two scenarios applicable for general public, swimming in seawater contaminated with treated ballast water and ingestion of seafood which has been exposed to treated ballast water are taken into consideration.

8.4 Conclusion

8.4.1 If the RCR < 1, the exposure is deemed to be safe.

8.4.2 However, risks are regarded not to be controlled when the estimated exposure levels exceed the DNEL and/or the DMEL, that is, if the RCR ≥ 1.

8.4.3 If the treated ballast water contains two or more chemicals with the same toxicological effect, these should be evaluated as an 'assessment group'. The RCR for an assessment group is calculated by addition of all RCRs of the individual components:

$$RCR_{group} = RCR_A + RCR_B + RCR_C + \cdots.$$

For the group RCR the same conclusions apply as described above.

8.4.4 If an unacceptable level of risk is identified for any of the scenarios in the first tier, the second tier is applied. If still an unacceptable risk is identified further refinement of the exposure assessment and/or the assessment factors might be performed giving special attention to route-specific contributions and additional RMM.

* *

APPENDIX 5

MAMPEC 3.0 INFORMATION

1 GENERAL

The model Marine Antifoulant Model for PEC calculation for Ballast Water (MAMPEC BW 3.0) or latest available version may be downloaded from the website of Deltares in the Netherlands. The website is:

http://www.deltares.nl/en/software/1039844/mampec/1232321

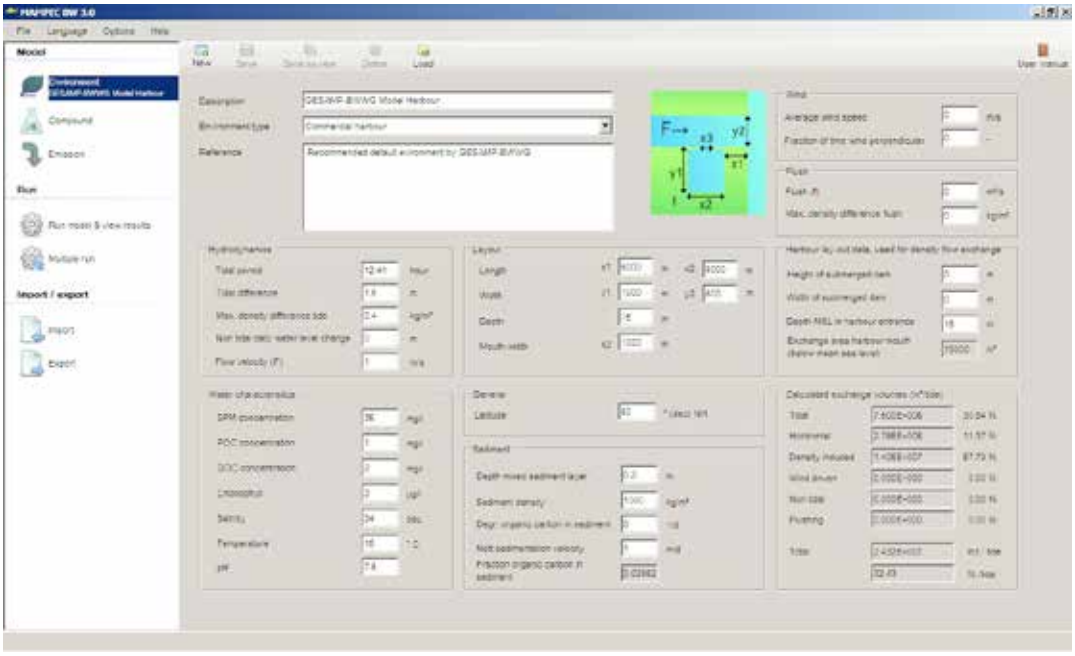
Follow the installation instructions and run the model.

2 CALCULATION OF THE PREDICTED ENVIRONMENTAL CONCENTRATION (PEC)

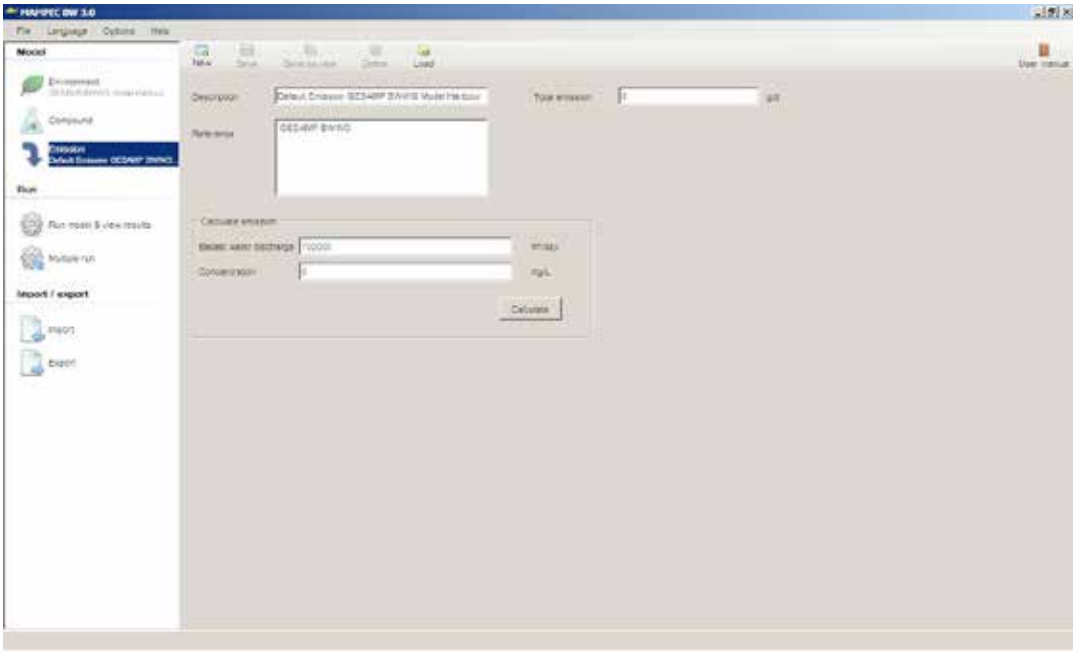
2.1 This procedure is important for carrying out a risk assessment to the environment.

2.2 In order to provide a standard approach, it is recommended that the MAMPEC-BW 3.0 or latest available version is used to determine the PEC for each chemical identified.

2.3 When this model is used, the following the GESAMP-BWWG Harbour Environment should be selected from the options available:



2.4 In addition to the GESAMP-BWWG Harbour Environment shown above, the following standard GESAMP-BWWG emission data need to be included as part of the GESAMP-BWWG Standard model:



2.5 The results of carrying out this procedure for each of the chemicals associated with the BWMS will be a series of PEC values, which should be included in a table with the Predicted No Effect Concentration (PNEC) and the appropriate assessment factor (AF). As a first assessment, the maximum value from the MAMPEC-BW 3.0 or latest available version calculations should be used. If this comparison results in PEC/PNEC ratios above 1.0, the 95%-ile may be used. If the PEC/PNEC ratio is still above 1.0, additional mitigation measures or a scientific reasoning may be proposed for discussion in the GESAMP-BWWG.

2.6 The resulting table should be reported in the main document of the submission.

3 CALCULATION OF THE PEC IN THE VICINITY OF THE SHIP ($PEC_{NEAR\ SHIP}$)

3.1 The MAMPEC-BW, latest available version, will calculate the stationary concentration in the harbour after discharge of ballast water. To account for local effects, near the ship at discharge, the local concentration at near ship is estimated using the formulae suggested in Zipperle et al., 2011 (Zipperle, A., Gils J. van, Heise S., Hattum B. van, Guidance for a harmonized Emission Scenario Document (ESD) on Ballast Water discharge, 2011):

$$C_{max} = \frac{C_{BW} + (S-1) \cdot C_{mean}}{S}$$

where:

C_{max} = the maximum concentration due to near ship exposure (µg/L) = $PEC_{near\ ship}$

C_{BW} = the concentration found in the discharged ballast water (µg/L)

S = dilution factor based on sensitivity analysis with a higher tier model, default value = 5

C_{mean} = the mean concentration as output from MAMPEC-BW = called average in the MAMPEC results calculated.

3.2 The concentration calculated with this formula will be compared to acute toxicity data for the Active Substances and Relevant Chemicals to evaluate the short-term effects on aquatic organisms according to the ratio:

$$PEC_{near\ ship} / PNEC_{near\ ship}.$$

* *

APPENDIX 6

DATABASE OF CHEMICALS MOST COMMONLY ASSOCIATED WITH TREATED BALLAST WATER

For the 43 chemicals presented below, the GESAMP-BWWG holds sufficient information from the literature on physico-chemical, ecotoxicological and toxicological properties and no additional supporting information needs to be submitted by applicants. It is recommended that applicants make use of the latest version of the Database, as published by MEPC when preparing their application dossiers.

Substance	CAS-number
Acetaldehyde	75-07-0
Bromate ion	15541-45-4
Bromochloroacetic acid	5589-96-8
Bromochloroacetonitrile	83463-62-1
Chloral hydrate	302-17-0
Chloropicrin	76-06-2
Dalapon	75-99-0
1,2-dibromo-3-chloropropane	96-12-8
Dibromoacetic acid	631-64-1
Dibromoacetonitrile	3252-43-5
Dibromochloroacetic acid	5278-95-5
Dibromochloromethane	124-48-1
1,1-dichloroethane	75-34-3
1,1-dibromoethane	557-91-5
Dibromomethane	74-95-3
Dichloroacetic acid	79-43-6
Dichloroacetonitrile	3018-12-0
Dichlorobromoacetic acid	71133-14-7
Dichlorobromomethane	75-27-4
1,2-dichloroethane	107-06-2
Dichloromethane	75-09-2
1,2-dichloropropane	78-87-5
Formaldehyde	50-00-0
Monobromoacetic acid	79-08-3
Monobromoacetonitrile	590-17-0

→

Substance	CAS-number
Monochloroacetic acid	79-11-8
Monochloroacetonitrile	107-14-2
Monochloroamine	10599-90-3
Potassium bromate	7758-01-2
Sodium bromate	7789-38-0
Sodium hypochlorite	7681-52-9
Sodium thiosulphate	7772-98-7
Tetrachloromethane	56-23-5
Tribromoacetic acid	75-96-7
Tribromomethane	75-25-2
2,4,6-tribromophenol	118-79-6
Trichloroacetic acid	76-03-9
Trichloroacetonitrile	545-06-2
Trichloroethene	79-01-6
1,1,1-trichloroethane	71-55-6
1,1,2-trichloroethane	79-00-5
Trichloromethane	67-66-3
Trichloropropane	96-18-4

IMO BWM.2/Circ.8 of 27 October 2006

Harmonized implementation of the Guidelines for approval of Ballast Water Management Systems (G8)

1. The Marine Environment Protection Committee, at its fifty-fifth session (9-13 October 2006), recognizing the need to provide appropriate guidance for the harmonized implementation of the Guidelines for Approval of Ballast Water Management Systems (G8) adopted by resolution MEPC.125(53), approved a guidance note intended to be used during the type approval process as contained in the annex to this circular.

2. Member Governments are invited to use the annexed guidance note when implementing the requirements of resolution MEPC.125(53) regarding the approval of Ballast Water Management Systems and bring the guidance note to the attention of all parties concerned.

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ANNEX

GUIDANCE NOTE FOR THE HARMONIZED IMPLEMENTATION OF THE GUIDELINES FOR APPROVAL OF BALLAST WATER MANAGEMENT SYSTEMS (GS) ADOPTED BY RESOLUTION MEPC.125(53)

1 Part 2 of the annex to Guidelines for approval of Ballast Water Management Systems (G8) provides the test and performance specifications required for the approval of such systems.

2 The tests carried out in compliance with the above requirements for a specified Treatment Rated Capacity (TRC) should be considered valid for type approval of a Ballast Water Management System with a higher TRC that consists of multiple units of that approved Ballast Water Management System, provided the ultimate functioning and effectiveness of the system on board a ship of the type and size for which the equipment will be certified will not be adversely affected.

3 The manufacturer shall give evidence by using mathematical modelling and/or calculations or by full scale shipboard testing that the system and its performance regarding D-2 standard will not be adversely affected and that only the pipe work and flow partitioning are concerned.

IMO BWM.2/Circ.7 of 27 October 2006

Interim Survey Guidelines for the purpose of the International Convention for the Control and Management of Ships' Ballast Water and Sediments under the Harmonized System of Survey and Certification (resolution A.948(23))

1. The Sub-Committee on Flag State Implementation, at its fourteenth session (5 to 9 June 2006), completed the work on the Interim Survey Guidelines for the purpose of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) under the Harmonized System of Survey and Certification (resolution A.948(23)) in accordance with regulation E-1 of the BWM Convention and invited the Marine Environment Protection Committee to consider these Guidelines and take action as appropriate.

2. Recognizing that only survey requirements of instruments that are in force may be integrated in Assembly resolution A.948(23), FSI 14 also agreed to keep these Guidelines in abeyance until the BWM Convention enters into force. Notwithstanding the above, FSI 14 was of the view that it would be beneficial to circulate these Guidelines to the interested parties for information in the interim period prior to the entry into force of the BWM Convention.

3. The Marine Environment Protection Committee, at its fifty-fifth session (9-13 October, 2006), endorsed the view of FSI Sub-Committee and approved these Guidelines in principle for dissemination through this circular. The Guidelines will facilitate the survey of ships which are requested by their Administrations or shipowners to certify compliance with the provisions of the BWM Convention on a voluntary basis.

4. Member Governments are invited to bring this circular to the attention of all parties concerned and, in particular, national authorities or recognized organizations in charge of ship survey and certification.

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ANNEX

INTERIM SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION (RESOLUTION A.948(23)) FOR THE PURPOSE OF THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

(All references are to the English text)

1 "Contents"

1.1 The following new section 5 is added:

"ANNEX 5

SURVEY GUIDELINES UNDER THE CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

(B) 1 GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE

(BI) 1.1 Initial surveys

(BA) 1.2 Annual surveys

(BIn) 1.3 Intermediate surveys

(BR) 1.4 Renewal surveys"

2 Section "GENERAL"

2.1 Insert new subparagraph .7 after existing subparagraph 1.1.6:

".7 International Convention for Control and Management of Ships' Ballast Water and Sediments" (Ballast Water Management Convention)

2.2 Insert new subparagraph .5 after existing subparagraph 1.2.4:

"1.2.5 Survey Guidelines under the Convention for Control and Management of Ships' Ballast Water and Sediments (annex 5)"

2.3 In subparagraph 2.8.1, a new line is added after "BCH Code 85/90, regulation .6.2.1.1", as follows:

"Ballast Water Management Convention regulation E-1.1.1".

2.4 In subparagraph 2.8.3, a new line is added after "BCH Code 85/90, regulation .6.2.1.2", as follows:

"Ballast Water Management Convention regulation E-1.1.2".

2.5 In subparagraph 2.8.4, a new line is added after "BCH Code 85/90, regulation .6.2.1.3", as follows: "Ballast Water Management Convention regulation E-1.1.3".

2.6 In subparagraph 2.8.5, a new line is added after "BCH Code 85/90, regulation 1.6.2.1.4", as follows:

"Ballast Water Management Convention regulation E-1.1.4".

2.7 In subparagraph 3.8, after the existing text "(P) for the Passenger Ship Safety Certificate;" add the following new line:

"(B) for the International Ballast Water Management Certificate;"

2.8 In subparagraph 4.8.1, sixth line, after "and the BCH Code 85/90 regulation 1.6.1.3" add the following text: ", or in the case of the Ballast Water Management Convention the survey shows that the ship's Ballast Water Management does not conform to the particulars of the Certificate required under regulations E-2 or E-3, or is such that the ship is not fit to proceed to sea without presenting a threat of harm to the environment, human health, property or resources, the surveyor should be guided by regulation E-1.6."

2.9 In paragraph 5.2:

.1 in the references, third line, replace with a comma (",") the word "and" between "regulation 1.5.6.3" and "the BCH Code"; replace the full stop at the end of the sentence with a comma; and add the following text at the end of the line "and the Ballast Water Management Convention regulations E-5.5 and E-5.6."

.2 in the second paragraph, 13th line from the top, replace with a comma (",") the word "and" between "1.5.6.6" and "the BCH Code"; and after "regulations 1.6.6.5 and 1.6.6.6" add the following text: "and the Ballast Water Convention regulation E-5.2.2."

.3 in the second paragraph, last line, replace with a comma (",") the word "and" between "regulation 1.5.6.2.2" and "the BCH Code"; and add the following text at the end of the line: "and the Ballast Water Management Convention regulation E-5.3."

2.10 In paragraph 5.4 in the references, last line, replace with a comma (",") the word "and" between "regulation 1.5.6.6" and "the BCH Code"; and add the following text at the end of the line "and the Ballast Water Management Convention regulation E-5.3."

2.11 In paragraph 5.5 in the references, last line, replace with a comma (",") the word "and" between "regulation 1.5.6.7" and "the BCH Code"; and add the following text at the end of the line "and the Ballast Water Management Convention regulation E-5.7."

3 Annex 1 "SURVEY GUIDELINES UNDER THE 1974 SOLAS CONVENTION, AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO"

3.1 The following new subparagraph .8*ter* is added after existing paragraph 1.2.1.8*bis*:

"(EA) .8*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

3.2 The following new subparagraph .8*ter* is added after existing paragraph 2.2.1.8*bis*:

"(CA) .8*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

3.3 The following new subparagraph .8*ter* is added after existing paragraph 4.2.1.8*bis*:

"(RP) .8*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

3.4 The following new subparagraph .5*ter* is added after existing paragraph 5.2.1.5*bis*:

"(PR) .5*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

4 Annex 2 "SURVEY GUIDELINES UNDER THE 1966 LOAD LINE CONVENTION, AS MODIFIED BY THE 1988 PROTOCOL RELATING THERETO"

4.1 The following new subparagraph .8*ter* is added after existing paragraph 1.2.1.8*bis*:

"(LA) .8*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

5 Annex 3 "SURVEY GUIDELINES UNDER THE 1973/78 MARPOL CONVENTION"

5.1 The following new subparagraph .8*bis* is added after existing paragraph 1.2.1.8:

"(OA) .8*bis* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

6 Annex 4 "SURVEY GUIDELINES UNDER THE MANDATORY CODES"

6.1 The following new subparagraph .6*ter* is added after existing paragraph 1.2.1.6*bis*:

"(DA) .6*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

6.2 The following new subparagraph .6*ter* is added after existing paragraph 2.2.1.6*bis*:

"(GA) .6*ter* checking, when appropriate, the validity of the International Ballast Water Management Certificate;"

7 New Annex 5

7.1 Insert new Annex 5, starting with a new page following the last entry of Annex 4 ((GR) 2.4.3.1):

"ANNEX 5

SURVEY GUIDELINES UNDER THE 2004 INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS

(B) **1 GUIDELINES FOR SURVEYS FOR THE INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE**

(BI) **1.1 Initial surveys** – see part "General" section 2.1

(BI) 1.1.1 For the Control and Management of Ships Ballast Water Sediments the examination of plans and designs should consist of:

(BI) .1 examining the design and construction (regulation B-5);

(BI) .2 examining the ballast water management plan (regulation B-1);

(BI) .3 examination of plans for the installation of ballast water management systems (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .4 if applicable, examination of plans for the installation of prototype ballast water treatment technologies (regulation D-4).

(BI) 1.1.2 For Control and Management of Ships Ballast Water Sediments the survey during construction and after installation should consist of:

(BI) .1 confirming that the Ballast Water Management Plan has been provided (regulation B-1);

(BI) .2 confirming that the Ballast Water Record Book has been provided (regulation B-2);

(BI) .3 confirming that certificate(s) for type approval of ballast water management system(s) are available (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .4 confirming that a statement has been provided by the Administration, or from a laboratory authorized by the Administration, confirming that the electrical and electronic components of the ballast water management system(s) have been type-tested in accordance with the specifications for environmental testing contained in Part 3 of the Annex of the Guidelines for Approval of Ballast Water Management Systems (G8) (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .5 confirming that equipment manuals for major components of the ballast water management system(s) have been provided (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .6 confirming that an operations and technical manual for the ballast water management system(s) specific to the ship and approved by the Administration, containing a technical description of the ballast water management system(s), operational and maintenance procedures, and backup procedures in case of equipment malfunction has been provided (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .7 confirming that installation specifications for the ballast water management system(s) have been provided (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .8 confirming that installation commissioning procedures for the ballast water management system(s) have been provided (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .9 confirming that initial calibration procedures of the ballast water management system(s) have been provided (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .10 confirming that sampling facilities are provided and so arranged in order to collect representative samples of the ship's ballast water from the ballast water management system(s) intake(s) before the ballast discharge points and any other points necessary for sampling (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .11 verifying that the BWMS installation has been carried out in accordance with the technical installation specification (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .12 verifying that the BWMS is in conformity with the Type Approval Certificate of BWMS issued by the Administration or its representative (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .13 verifying that the installation of the complete BWMS has been carried out in accordance with the manufacturer's equipment specification (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .14 verifying that any operational inlets and outlets are located in the positions indicated on the drawings of the pumping and piping arrangements (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .15 verifying that the workmanship of the installation is satisfactory and, in particular, that any bulkhead penetrations or penetrations of the ballast system piping are to the relevant approved standards (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .16 verifying that the Control and Monitoring Equipment operates correctly; (note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .17 confirming that if applicable the ballast water management recording device(s) are operable and that there is a sufficient supply of consumables for the recording device(s) on board (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .18 confirming the satisfactory installation and operation of the ballast water management system, including any audible or visual alarms (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to

regulation D-2 is applicable);

(BI) .19 confirming that, if applicable, sufficient active substances are provided on board (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .20 confirming that, if applicable, dosage instruction for active substances or preparations are available on board (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BI) .21 verifying that, if applicable, the prototype ballast water treatment technology installation has been carried out in accordance with the approved Programme and that the workmanship of the installation is satisfactory (regulation D-4);

(BI) .22 confirming that, if applicable, a Statement of Compliance for a Prototype Ballast Water Treatment Technology has been provided (regulation D-4);

(BI) 1.1.3 For the Control and Management of Ships Ballast Water Sediments the completion of initial survey should consist of:

(BI) .1 after satisfactory survey, the International Ballast Water Management Certificate should be issued.

(BA) **1.2** **Annual surveys** - see part "General" section 2.5

(BA) 1.2.1 For the Control and Management of Ships Ballast Water and Sediments the examination of current certificates and other records should consist of:

(BA) .1 checking the validity, as appropriate, of the Cargo Ship Safety Equipment Certificate, the Cargo Ship Safety Radio Certificate and the Cargo Ship Safety Construction Certificate or the Cargo Ship Safety Certificate or Passenger Ship Safety Certificate;

(BA) .2 checking the validity of the International Load Line Certificate or International Load Line Exemption Certificate;

(BA) .3 checking the validity of the International Oil Pollution Prevention Certificate, International Sewage Pollution Prevention Certificate, and International Air Pollution Prevention Certificate;

(BA) .4 checking the validity of the International Ship Security Certificate;

(BA) .4*bis* checking, when appropriate, the validity of the Safety Management Certificate (SMC) and that a copy of the Document of Compliance (DOC) is on board;

(BA) .5 checking the certificates of class, if the ship is classed with a classification society;

(BA) .6 checking, when appropriate, the validity of the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk;

(BA) .7 checking when appropriate the validity of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk;

(BA) .7*bis* checking, when appropriate, the validity of the International Sewage Pollution Prevention Certificate;

(BA) .8 checking that the ship's complement complies with the Minimum Safe Manning Document (SOLAS 74/88 regulation V/13(b));

(BA) .9 checking that the master, officers and ratings are certificated as required by the STCW Convention;

(BA) .10 checking whether any new equipment has been fitted and, if so, confirm that it has been approved before installation and that any changes are reflected in the certificate;

(BA) .11 confirming that the Ballast Water Management Plan is on board (regulation. B-1);

(BA) .12 checking whether the appropriate entries have been made in the Ballast Record Book (regulation B-2);

(BA) .13 sighting the type test certificate(s) for the ballast water management system(s) (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BA) .14 sighting the records of the recording device, if fitted (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BA) .15 sighting, if applicable, the Statement of Compliance for a Prototype Ballast Water Treatment Technology (regulation D-4);

(BA) .16 verifying, if applicable, that there is evidence that the Prototype Ballast Water Treatment Technology is continuing to be operated in accordance with the approved programme (regulation D-4).

(BA) 1.2.2 For the Control and Management of Ships Ballast Water Sediments the annual survey should consist of:

(BA) .1 examining externally the ballast water treatment system and confirming, as far as practicable its satisfactory operation (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BA) .2 confirming that, if applicable, active substances in accordance with the manufacturer's recommendations are provided on board (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BA) .3 confirming that, if applicable, dosage instruction for active substance or preparations are available on board (regulation D-3 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BA) .4 where applicable examining externally the prototype ballast water treatment technology and confirming, as far as practicable its satisfactory operation (regulation D-4);

(BA) 1.2.3 For the Control and Management of Ships Ballast Water Sediments the completion of annual survey should consist of:

(BA) .1 after satisfactory survey, the International Ballast Water Management Certificate should be endorsed;

(BA) .2 if a survey shows that the condition of a ship or its equipment is unsatisfactory; see part "General" section 4.8.

(BIn) **1.3** **Intermediate surveys** - see part "General" section 2.4

(BIn) 1.3.1 For the Control and Management of Ships Ballast Water Sediments the examination of current certificates and other records should consist of:

(BIn) .1 the provisions of (BA) 1.2.1.

(BIn) 1.3.2 For the Control and Management of Ships Ballast Water Sediments the intermediate survey should consist of:

(BIn) .1 the provisions of (BA) 1.2.2;

(BIn) .2 examining the ballast water management system for obvious defects, deterioration or damage including examining associated pumps, piping and fittings for wear and corrosion (regulations D-3 and D-4 / note, this survey requirement is relevant only when the performance standard according to regulation D-2 is applicable);

(BIn) 1.3.3 For the Control and Management of Ships Ballast Water Sediments the completion of intermediate survey should consist of:

(BIn) .1 after satisfactory survey, the International Ballast Water Management Certificate should be endorsed;

(BIn) .2 if a survey shows that the condition of a ship or its equipment is unsatisfactory, see part "General" section 4.8.

(BR)**1.4** **Renewal surveys** - see part "General" section 2.3

(BR) 1.4.1 For the Control and Management of Ships Ballast Water Sediments the examination of current certificates and other records should consist of:

(BR) .1 the provisions of (BA) 1.2.1, except for the validity of the International Ballast Water Management Certificate.

(BR) 1.4.2 For the Control and Management of Ships Ballast Water Sediments the renewal survey should consist of:

(BR) .1 the provisions of (BIn) 1.3.2;

(BR) .2 if applicable, confirming, if necessary by simulated test or equivalent, the satisfactory operation of the ballast water management systems (regulation. D-4).

(BR) 1.4.3 For the Control and Management of Ships Ballast Water Sediments the completion of renewal survey should consist of:

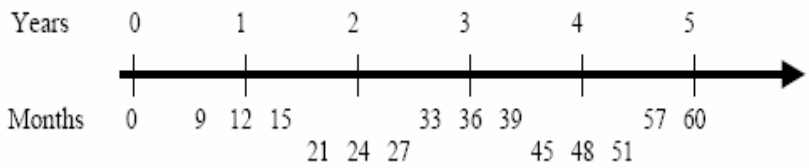
(BR) .1 after satisfactory survey, the International Ballast Water Management Certificate should be issued."

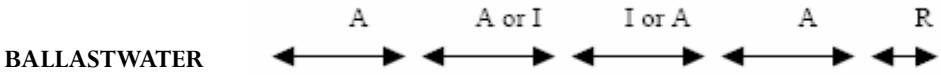
8 Appendix

8.1 Insert new line showing the diagrammatic arrangement of surveys and certification for Ballast Water Management Convention in the Appendix:

Appendix

THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION
DIAGRAMMATIC ARRANGEMENT





3. OFFICIAL DOCUMENTS ON BALLAST WATER MANAGEMENT IN THE MEDITERRANEAN SEA REGION

3.1 The 2012 Mediterranean Strategy

Decision IG.20/11*

Regional strategy addressing ship's ballast water management and invasive species

The 17th Meeting of the Contracting Parties,

Desirous to address the risk arising from the introduction of invasive alien species through ships' ballast water, which has been recognized as one of the four greatest threats to the world's oceans and which can cause extremely severe and irreversible environmental, economic and public health impacts,

Recalling the objectives of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 and particularly its Article 13 whereby, to achieve these objectives, "*the Parties bordering enclosed and semi-enclosed seas, shall endeavor, taking into account characteristic regional features, to enhance regional co-operation, including through the conclusion of regional agreements*",

Further recalling Decision IG.19/11 adopted at the 16th Ordinary Meeting of the Contracting Parties to the Barcelona Convention (Marrakesh, November 2009) to develop a regional strategy on ships' ballast water management in the Mediterranean within the Mediterranean Action Plan (MAP), and which encouraged the Mediterranean GloBallast Regional Task Force to endeavor to finalize such regional strategy as soon as possible, for possible adoption by the 17th Ordinary Meeting of the Contracting Parties to the Barcelona Convention;

Highlighting the relevance of the strategy to the process of gradual application by MAP of the ecosystem approach for the management of human activities in the Mediterranean region, that includes ecological objectives and operational objectives with associated indicators for the introduction of non indigenous species in the ecosystem,

Noting that the Mediterranean region is one of the six high priority regions included in the GEF/UNDP/IMO Project entitled *"Building Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms in Ships' Ballast Water"("GloBallast Partnerships" Project)*,

Further noting that the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) was designated as the Regional Coordination Organization (RCO) for the implementation of the GloBallast Partnerships Project in the Mediterranean in collaboration with the Regional Activity Centre for Specially Protected Areas (RAC/SPA),

Acknowledging the advanced status of implementation of the GloBallast Partnerships Project in the Mediterranean, and particularly the work undertaken by the Mediterranean GloBallast Regional Task Force, with the support of REMPEC, towards the development of a regional strategy on ships' ballast water management in the Mediterranean,

Considering that the 10th Meeting of the Focal Points of REMPEC endorsed and recommended the adoption of the *Mediterranean Strategy on Ships' Ballast Water Management*, including its Action Plan and Timetable, as well as the "General Guidance on the Voluntary Application of the D1 Ballast Water Exchange Standard by Vessels Operating between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea" by the Contracting Parties to the Barcelona Convention,

Recognizing the dialogue established with other Regional Seas Agreements, in order to ensure efficient handling of the issue of ships' ballast water management and taking into consideration that the General Guidance Document was adopted by the Contracting Parties to the OSPAR Convention during their last Ministerial Meeting (September 2010), and by the Contracting Parties to the Helsinki Convention during the 32nd Meeting of the HELCOM Commission (March 2011);

* Adopted by the 17th Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Envirounent and the Coastal Region of the Mediterranean and its Protocols (Paris, 8-10 Febraury 2012)

Adopts the *Mediterranean Strategy on Ships' Ballast Water Management*, including its Action Plan and Timetable, as set out in Annex I to this Decision, and the "General Guidance on the Voluntary Application of the D1 Ballast Water Exchange Standard by Vessels Operating between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea", as outlined in Annex II to this Decision, and agrees to the joint submission, with the other concerned Regional Seas Agreements, of the General Guidance Document to the Secretary-General of the International Maritime Organization (IMO);

Invites the Contracting Parties to take the necessary measures for its implementation;

Requests REMPEC and SPA/RAC to assist the Parties in its implementation.

* * *

ANNEX I

MEDITERRANEAN STRATEGY ON SHIPS' BALLAST WATER MANAGEMENT

1. The present Strategy takes into account all relevant international, regional and sub-regional instruments and mechanisms, as well as all relevant Mediterranean action plans, policies and decisions, including Decision IG 17/6 of the Contracting Parties to the Barcelona Convention related to the implementation of the ecosystem approach adopted under the Barcelona Convention and its protocols (adopted at their 15th Ordinary Meeting (Almeria, Spain, 15-18 January 2008, UNEP (DEC)/MED IG.17)).

2. The Mediterranean Sea herewith refers to the Mediterranean Sea area as defined in Article 1 of the Barcelona Convention, i.e. the "*maritime waters of the Mediterranean Sea proper with its incorporated gulfs and seas, bounded to the west by the meridian passing through the Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between Mehmetcik and Kumkale lighthouses*".

Definition

3. For the purpose of this present Strategy, the term "invasive alien species" means "Harmful Aquatic Organisms and Pathogens", as defined in Article 1.8 of the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).

General objective

4. The general objective of the present Strategy is to establish the framework for a regional harmonised approach in the Mediterranean on ships' ballast water control and management which is consistent with the requirements and standards of the BWM Convention, as outlined in its Article 13.3.

Introduction

5. Invasive alien species have serious economic, environmental and human health impacts and are now recognized as one of the greatest threats to biodiversity globally. In marine and coastal environments, invasive alien species have been identified as one of the four greatest threats to the world's oceans. Ships' ballast water is of particular concern as a vector of introduction of invasive alien species in the Mediterranean Sea because of the large quantities of ballast water coming from different marine environments around the world being discharged at Mediterranean ports. Ballast sediments are also of concern for management as they provide a substrate for a variety of marine species, notably dinoflagellates.

6. The 2004 BWM Convention provides a critically needed set of management tools to address the issue and calls for regional cooperation and harmonization of policies to attempt solving this transboundary

marine environmental issue. Although the BWM Convention has not yet entered into force, the national process of ratifications is underway in many countries. Meanwhile, voluntary measures complying with the requirements of the Convention are needed in order to minimize the introduction of invasive alien species in the Mediterranean Sea.

7. The present Strategy is composed of eight Strategic Priorities and of an Action Plan and Workplan/ Timetable for its implementation.

Strategic Priority 1. Support international instruments developed to minimize the introduction of invasive alien species in the Mediterranean

8. Growing recognition of the impacts of invasive alien species has led to a widespread response to the issue, in the form of legal instruments as well as programmes aimed at developing practical, technical solutions. The Convention on Biological Diversity, 1992, (CBD) provides the basis for measures to protect biodiversity against invasive alien species (Article 8 h) and comprehensive Guiding Principles in this field have been adopted under this Convention in 2002[1].

9. The International Maritime Organization (IMO), its member States and the maritime industry have been working on the issue of ships' ballast water introduction for more than twenty years, initially developing voluntary guidelines and then developing a legally binding international regime to meet the new challenges posed by the problem. In February 2004, these global efforts culminated with the adoption of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention). The Convention sets out strict treatment standards for ballast water discharges, which, when in force, will apply to different ships at different times depending on their construction date and their tanks' ballast water capacity. Additionally, the Convention provides guidance for the type approval of ballast water treatment systems and identifies detailed procedures to ensure that the environmental toxicity of ballast water is evaluated and minimized, resulting in safe discharges of treated ballast water. This is especially important when systems use chemical treatment methods.

- **The Contracting Parties to the Barcelona Convention support the work for the minimization of the introduction of invasive alien species being carried out by the relevant organisations and forums, particularly the work of the International Maritime Organisation (IMO) and are committed to take all appropriate actions toward the ratification of the BWM Convention for its entry into force as soon as possible.**

Strategic Priority 2. Maintain capacity-building activities and initiatives in the Mediterranean region

10. The implementation of the IMO /GEF /UNDP GloBallast Partnerships project (*Building Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms in Ships' Ballast Water*) was initiated in 2008. The GloBallast Partnerships builds on the pilot phase and will focus on the implementation of the BWM Convention by assisting countries to enact legal, policy and institutional reforms to minimize the impacts of invasive alien species transferred by ships. Under this project, a number of important activities and initiatives are being undertaken in the Mediterranean region, which significantly help develop and strengthen the expertise within the region and the capacity of the Mediterranean coastal States in the field of ballast water management. However, the lifetime of the GloBallast Partnerships Project is limited and the project is expected to terminate in 2014.

[1] The Conference of the parties to the Convention on Biological Diversity adopted Guiding Principles for the Implementation of Article 8 (h). (COP 6 Decision VI/23, The Hague, 16-19 April 2002).

- **The Contracting Parties to the Barcelona Convention stress the need to continue efforts made in the region to enhance capacity building, knowledge transfer and training of personnel after the GloBallast Partnerships Project terminates, and to involve relevant international and regional co-operation mechanisms, non-governmental organisations and agencies for the continuation of the process initiated.**

Strategic Priority 3 **Develop advanced knowledge on environmental condition of the Mediterranean and ships' mediated introduction of invasive alien species**

11. The development and updating of knowledge in the field of ships' mediated introduction of invasive alien species in the Mediterranean is fundamental in order to have a sound scientific, technical and legal basis as a solid basis for management measures. Significant progress has been made to better understand the relation between maritime transport and invasive alien species introduction in the marine environment of the Mediterranean. Biodiversity impacts of species introduction and maritime traffic trends in the Mediterranean in the region have been identified and are outlined below.

12. **Research has shown that the Mediterranean marine ecosystems and resources have been and continue to be severely compromised by invasive alien species,** and remain at high risk of further invasion as maritime traffic escalates. Zenetos and et.al (2008) have reported 903 alien species in the Mediterranean basin[2] based on literature up to April 2008. The rate of biological invasions in the Mediterranean is estimated at one new species entry every nine days.

13. Of these species invasions, 21 percent are believed to have arrived with vessels, however many more have relied on the local shipping traffic for secondary spread within the Mediterranean region. Ballast water has been implicated in many serious invasions of the region including the Comb Jelly (*Mnemiopsis leidyi*), which has lead to fisheries collapse in the Black and Caspian Seas. The Mediterranean GloBallast Task Force produced a review of scientific and technical studies related to ships' ballast water and invasive alien species produced by research institutes and universities of the Mediterranean region. The review highlighted that while the introduction of invasive alien species is well documented in certain countries, there are important information gaps in certain areas of the Mediterranean.

14. **The Mediterranean is a major shipping transit route**. In 2006, around 10,000 mainly large vessels transited the area en-route between non Mediterranean ports. Merchant vessels operating within and through the Mediterranean are getting larger and carrying more trade in larger parcels.
Vessels transiting the Mediterranean average 50,000 DWT and are, on average, over three times larger than those operating within the Mediterranean[3].

15. Overall vessel activity within the Mediterranean has been rising steadily over the past 10 years and is projected to increase by a further 18 per cent over the next 10 years. Transits through the Mediterranean are expected to rise by 23 per cent. Increases in vessel activity will be coupled with the deployment of ever larger vessels. Chemical tanker and container vessels will show the highest rates of growth in respect of port callings within the Mediterranean over the next ten years whilst increases in transits will be most pronounced in the product and crude tanker sector.

16. **Intra-Mediterranean traffic**. Seaborne trade between Mediterranean littoral States, which is relatively underdeveloped, represents 18 per cent of the total Mediterranean littoral States' trade. The top

[2] A.Zenetos, E. Meriç, M. Verlaque, P. Galli, C.-F. Boudouresque, A. Giangrande, M. E. Çınar and M. Bilecenoğlu (2008), Mediterranean Marine Science 9/1, 119-165.

[3] This paragraph as well as the following paragraphs describing the maritime traffic in the region are extracted from the Study of Maritime Traffic Flows in the Mediterranean Sea, Final Report, REMPEC (2008).

20 Mediterranean port to port trade routes measured in terms of number of voyages are dominated by high frequency small size Intra Mediterranean passenger traffic. However, the top 20 transit routes through and voyages within the Mediterranean, measured by vessel capacity and therefore cargo volumes, are dominated by larger tanker, container and dry bulk vessels.

17. **The Mediterranean is both a major loading and unloading centre for crude oil.** Approximately 18 per cent of global seaborne crude oil shipments take place within or through the Mediterranean. North African ports in Libya, Algeria, Tunisia and Persian Gulf oil shipped via Egypt account for over 90 per cent of all crude oil loaded in the Mediterranean. Italy accounts for nearly half of all crude oil unloaded in the Mediterranean. Exports of crude oil from Black Sea ports averaging at over 100 million tonnes a year are expected to continue to rise, resulting in continued seaborne transits via the Istanbul Straits and increased use of eastern Mediterranean ports linked to new pipelines intended to bypass the Istanbul Straits. The resumption of Iraqi crude supplies via Ceyhan in Turkey and via Syrian ports will reverse the trend seen over recent years of declining crude exports from these ports.

18. The efforts initiated to compile relevant data and enhance the knowledge on the above issues are to be acknowledged, however, these efforts need to be strengthened with comprehensive species inventories, data on species present in ports and data related to maritime traffic in the region, as well as relevant oceanographic data. The compilation of comprehensive species inventories for individual ports plays a significant role in ballast water management. For a port to effectively manage the ballast water associated with its shipping movements, data must be available and complete from the local port as well as from the source ports for the ballast water being received. It is important that the methods and approaches used to compile a baseline list of species within a port are standardised among countries. Port Biological Baseline Surveys (PBBS) are in this regard, an important tool for knowledge management.

- **The Contracting Parties promote, individually or through regional co-operation, research and development programmes in the field of invasive alien species and ships' ballast water management, as means to enhance knowledge and help setting scientific grounds on which best measures on controlling the transfer of invasive alien species can be based. The Contracting Parties also agree that results of such scientific work should be made available to all interested public.**

Strategic Priority 4. **<u>Use risk assessment as a reliable tool to assist in ballast water management decision-making and in compliance, monitoring and enforcement procedures</u>**

19. **Risk assessment and ballast water management.** Risk assessment can be helpful in ensuring that the provisions of the BWM Convention are applied in a consistent manner, based on scientifically robust groundwork. In particular, the IMO has developed Guidelines for the implementation of the BWM Convention under which risk assessment is needed. The Guidelines on Designation of Areas for Ballast Water Exchange (G14) are of particular relevance for the Mediterranean region, as these address the sea areas where a vessel cannot exchange its ballast water and where the port State may designate areas, in consultation with adjacent or other States, where a ship may conduct ballast water exchange. The IMO also recommends carrying out risk assessment when a Party, within waters under its jurisdiction, is granting exemptions to ships (G7 Guidelines for Risk Assessment under Regulation A4 of the BWM Convention).

20. Risk assessment is also essential to have a sound knowledge of the overall risks for introduction of invasive alien species associated with the maritime traffic in the Mediterranean region. When resources are limited, management actions such as compliance, monitoring and enforcement (CME) may be prioritized according to the higher risk areas or vessels.

21. **Biological invasion of ports.** Major shipping ports are often the first places where invasive alien species are introduced and become established. Port Biological Baseline Surveys (PBBS) are used to devel-

op a baseline list of species – both native and non-native – that are present in a shipping port. Subsequent long-term monitoring regimes should be put in place to continue building an information base in this field and detect any new invasions. This data can be used to communicate risks to other shipping ports or countries, as appropriate, and provide an essential reference point for management of non-native species. As they target marine pests, PBBS can also help raise awareness of marine pest issues within the region. Most importantly, they allow any existing introductions to be recorded, tracked, and managed.

22. **Ports at risk of biologic invasion.** Some Mediterranean ports are more at risk of biological invasion as they are ports receiving greater volumes of ballast water originating from ports located outside the Mediterranean sea. These ports are the following: Arzew, Sidi Kerir Terminal, Algeciras, Tripoli, Eleusis, Ceyhan, Port de Bouc, Banias, Brindisi, and Bizerta. It has been estimated that 69% of the ballast water received by Mediterranean ports concerns three countries: Algeria, Egypt and Libya, as these countries host important oil terminals, where oil tankers arrive on ballast to load cargo. It has to be noted that the coast line of these three countries forms almost all the south coastline of the Mediterranean. In addition, it should be noted that once an invasive alien species is introduced in one port located in the Mediterranean Sea, there is a risk of secondary introduction of other ports located within the region[4].

- **The Contracting Parties consider risk assessments at national, sub-regional or regional level, as an appropriate tool to guide on ballast water management measures and are committed to establish surveys and monitoring programmes including reporting and alert mechanisms.**

Strategic Priority 5. <u>Decide upon voluntary regional arrangements in the Mediterranean and ensure sub-regional and national strategies are in line with these</u>

23. Given the transboundary nature of invasive alien species issue, it must be recognized that individual countries cannot effectively address this concern on their own. A harmonized regional ballast water management regime has to be agreed upon by the Mediterranean coastal States, which takes into account the maritime traffic lanes in the region and the origin and distribution of ballast water in the ports of the region, as well as the particular geographical constraints of the area and associated scientific and oceanographic data.

24. As the BWM Convention is not yet in force, voluntary measures are called for in order to address the ships' ballast water mediated introduction of invasive alien species in the Mediterranean Sea. In addition, harmonised procedures incorporated in a compliance, monitoring and enforcement (CME) system should be implemented by all countries of the region. Sub-regional approaches within the Mediterranean Sea area (e.g. the BWM Sub Commission in the Adriatic Sea) are also encouraged and existing sub-regional agreements in the Mediterranean region should consider integrating BWM issues in their work, in coherence with the regional approach adopted. National strategies established by Mediterranean coastal States should take into account and be consistent with the policy and arrangements agreed upon at sub-regional and regional levels.

- **The Contracting Parties to the Barcelona Convention work collaboratively to adopt regional voluntary arrangements concerning ballast water management in the Mediterranean region, consistent with the requirements and standards set in the BWM Convention.**

[4] This section is based on the result of a study on ballast water origins and volumes in the Mediterranean, which was carried out by Mr. Bouteville for REMPEC in 2008, using the Study of Maritime Traffic Flows in the Mediterranean Sea, Final Report, REMPEC (2008).

Strategic Priority 6. Consider other regional seas strategies and initiatives

25. Harmonization of approaches to ballast water management across regional seas is essential to help achieve the goals of the BWM Convention. Communication and alignment with neighbouring regions and their BWM structures (e.g. PERSGA Strategic Action Plan for the Red Sea and Gulf of Aden, the Black Sea Strategy) is needed to ensure consistency between the regimes, and also to promote sharing of information between these interlinked marine regions. A dialogue should also be established with other relevant regional seas Secretariats such as the OSPAR Commission for the North-East Atlantic, which agreed in June 2007 on "General Guidance on the Voluntary Interim Application of the D1 Ballast Water Exchange Standards in the North-East Atlantic", the Helsinki Commission (HELCOM) for the Baltic Sea, which developed a roadmap towards a harmonised implementation of the IMO BWM Convention, and the ROPME Sea Area which recently adopted regional measures on ballast water management exchange.

- **The Contracting Parties to the Barcelona Convention are committed to enhance and maintain cooperation with the neighbouring regions of the Mediterranean Sea and with other relevant regional agreements in order to ensure that the measures adopted are consistent with other ballast water management regional arrangements.**

Strategic Priority 7. Keep the Strategy and Action plan under review and assess their implementation progress

26. The Strategy and Action Plan should be subject to periodic review to take into account emerging issues, outcomes of research and development (R&D) activities and experience gained from its operation and implementation.

27. Periodic gatherings of representatives of the regional co-ordinating mechanism and Secretariats should be arranged to assess progress with implementation of the various regional strategies and arrangements and facilitate reaching a harmonised approach at the global level.

- **The Contracting Parties to the Barcelona Convention call for regular meetings with the purpose of reviewing and evaluating the ongoing relevance of the Strategy, and overall effectiveness of activities carried out under the Action Plan, and that the work accomplished in the various regional seas regarding the management of ballast water is on the agenda of meetings and forums gathering the various regional Secretariats and agreements.**

Strategic Priority 8. Work on the identification of adequate resources to implement activities under the Strategy and Action Plan

28. The identification and securing of adequate resources for implementing the Strategy and Action Plan should be investigated from various sources, including IMO, REMPEC, and other MAP Regional Activity Centres, regional and international shipping and port industries, bilateral and multilateral donors and technical cooperation programmes.

- **The Contracting Parties to the Barcelona Convention long-term objective is to ensure the sustainability and continuity of activities from self-financing sources within the region.**

* *

Action Plan for the Implementation of the Regional Strategy on Ships' Ballast Water Management

The present Action Plan identifies eight main measures to be taken at regional level, sub-regional or national level in accordance with the Strategic Priorities, and include a workplan/timetable for their implementation (**Annex I**).

Action 1. Ratify the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention)

The urgent ratification of the BWM Convention is called for in order that, when it enters into force, the treatment standards for ballast water discharges become applicable to ships. To help the process out at national level, national policy initiatives preparing the ground and leading to the ratification should be undertaken.

The Contracting Parties to the Barcelona Convention, agree

a) to form a national policy working group to lead the process towards the ratification of the BWM Convention;

b) to draft the instrument of ratification for adoption through the proper channels with their respective Government system and;

c) to develop national legislation including fines for violators, which will give effect to the BWM Convention once ratified, as well as secondary regulations and technical arrangements for its enforcement.

Action 2. Adopt harmonised arrangements for ballast water exchange in the Mediterranean region

The harmonized arrangements are based on the relevant components and requirements of the BWM Convention. Until such a time as the Convention has entered into force, the arrangements should remain an interim voluntary instrument. This does not prejudice the right of any Contracting Party to determine special requirements in certain areas under their jurisdiction, in conformity with international law.

The Contracting Parties to the Barcelona Convention, agree

a) to adopt as soon as possible harmonized voluntary arrangements for ballast water exchange in the Mediterranean region (**Annex II**); and

b) to notify all interested parties of the adoption of harmonized voluntary arrangements for ballast water exchange in the Mediterranean sea through notices to shipping and instructions to surveyors.

Action 3. Establish a solid Compliance, Monitoring and Enforcement (CME) system in the Mediterranean region

In association with the development and implementation of the harmonized regional ballast water management regime, a generic compliance, monitoring and enforcement system (CME) needs to be developed to ensure compliance with the measures proposed within the regime. The CME system should incorporate the following:

1. requirement for ships to collect and record information about their BWM practices (i.e. uptake, management en route and discharge);

2. means for ships to transmit this information to the Port States' BWM regulatory authority, and to subsequently receive directions from them;

3. provision for examination/auditing of the ships' official log books or other official records to ascertain compliance with the BWM requirements of the Port State;

4. ability by the appropriate authority to obtain ballast water and sediment samples and carry out any necessary testing;

5. legal provision for enforcement measures to be applied for non-compliance with the required BWM requirements, and provisions for applying sanctions to violations; and

6. effective communication arrangements on a regional level to ensure proper tracking of violations and exchange of experience during the application of the CME system on a national level.

The proposed CME system for the region is attached as **Annex III**.

The Contracting Parties to the Barcelona Convention, agree

a) to adapt their existing Port State Control & CME systems to integrate the harmonized BWM CME procedures; and

b) to establish and maintain up to-date a regional communication system possibly within a clearing house mechanism (CHM), to allow exchange of experience and tracking of violations utilizing existing control agreements such as the Paris MoU and the Mediterranean MoU on Port State Control.

Action 4. <u>Establish a survey, biological monitoring and risk assessment system for Mediterranean ports</u>

The development of a uniform regional biological monitoring system for Mediterranean ports is crucial to understanding the nature of what is being managed, and supporting the methods through which the management is implemented. The process of developing this system should be composed of the following elements:

- Collection of data (biological, physical, chemical) on port environments;
- Reviewing best practices, existing literature and approaches, in order to agree on common approaches/protocols;
- Identifying biological data requirements for proposed risk assessment and management measure (non-indigenous species, invasive alien species (IAS));
- Identifying long-term monitoring procedures (parameters, frequency);
- Reviewing existing monitoring programmes, if any, to see if these meet common approaches/protocols;
- Preparing common implementation guidelines on Port Biological Baseline Surveys and Monitoring.

In some areas of the Mediterranean region, countries may identify sub-regional mechanisms for collaboration on surveys, monitoring and risk assessment. For example, in the Joint Commission for the protection of the Adriatic Sea waters and coastal areas, Croatia, Italy, Slovenia and Montenegro have formed the Ballast Water Management Sub-Commission (BWMSC) which focus on the Adriatic Sea area, and through which information on port surveys and IAS management is being shared.

The Contracting Parties to the Barcelona Convention, agree

a) to develop a regionally standardised biological sampling and monitoring protocol for use of Contracting Parties in building the necessary biological and environmental databases to support the IAS management objectives;

b) to collaborate, preferably following sub-regional approaches where relevant, on biological survey and monitoring activities, including to promote and ensure sharing of technical capacity, resources and results;

c) to seek institutional support at the national level to conduct port biological surveys and plans for monitoring, as part of their national strategy for ballast water and IAS management;

d) to adapt and use the regional CHM for sharing of data related to port surveys and ongoing biological monitoring; and

e) that a regional-level risk assessment should be produced based on the information made available through biological surveys, as well as the shipping movement and ballast water discharge databases.

Action 5. <u>Enhance expertise; facilitate knowledge transfer and capacity building in the Mediterranean region</u>

Given the absence of national legislation and technical initiatives related to ballast water management in several Mediterranean States, an effective Capacity Building programme should be established to assist in carrying out activities which will assist in implementing the Strategy and Action Plan. Capacity building activities should cover the following:

- identification of National Lead Agencies and relevant stakeholders for ballast water issues and formation of cross-sector/inter-ministerial working groups and committees;
- communication and awareness raising activities;
- port biota baseline surveys, monitoring and ballast water risk assessment;
- research and development projects;
- drafting of national ballast water legislation and regulations;
- compliance monitoring and enforcement;
- developing national ballast water management strategies and action plans; and
- developing self-financing mechanisms.

Training activities should be organised both at regional and sub-regional level taking into consideration similarities such as the geographical areas concerned (i.e. Eastern and Western Mediterranean countries), the language, the status of ratification etc.). In addition, these training activities should be carried out using the "Train the Trainer approach", where appropriate, and used by countries to replicate these training activities at national level.

The Contracting Parties to the Barcelona Convention, agree

a) to investigate the possibility of including training programmes and other capacity-building activities in the regular programme of work of the relevant Regional Activity Centres of MAP;

b) to seek and secure support, individually or through REMPEC, from the IMO Technical Cooperation Division (TCD), or other international organizations for national, sub-regional or regional training courses and other capacity-building actions in support of activities of the Action Plan;

c) to disseminate protocols and tools for standardization of technical approaches that could be used to conduct regional and national activities;

d) that countries with specific expertise on ballast water management related activities help organise national, sub-regional or regional training sessions; and

e) to replicate such training on a national level through the establishment of a national training programme on ballast water management activities.

Action 6. Enhance public awareness on ships' ballast water and invasive alien species issues

With a view to alert general and targeted public to the risks associated with introducing non- indigenous marine species in the marine environment, and in this way add to the efforts towards preventing and controlling the introduction of IAS into the Mediterranean Sea, coastal States and the maritime industry should involve themselves in endeavors to raise knowledge and awareness on the subject. General or specific awareness materials, according to the type of public targeted, are to be used when they exist, or be developed, preferably in the local language of their respective countries.

Awareness materials already prepared by IMO-Globallast are available for download from its website[5] including brochures, posters and other educational documents and tools. Where possible, collaborative partnerships will be forged between countries, and with NGO's and other public interest groups to aid in organising targeted public awareness campaigns.

The Contracting Parties to the Barcelona Convention, ***agree***

a) to use IMO Globallast Public awareness materials and translate these to local languages for dissemination at national level;

b) to carry out national seminars and workshops to raise awareness among the various stakeholders involved; and

c) to develop local case studies that may be used effectively for awareness and leveraging support within the Mediterranean region and its sub-regions.

Action 7. Set-up a web-based Mediterranean mechanism for exchanging information

To facilitate information exchange related to ballast water management issues among the Contracting Parties, an information exchange network is considered necessary in the Mediterranean region. This network will facilitate communications with and between countries, as well as function as a clearing house mechanism (CHM) for data and ballast water management related information within the region.

The Contracting Parties to the Barcelona Convention, agree

a) to establish a web based Regional Information System based on the structure outlined in **Annex IV**;

b) to explore possible options and functionalities of the system and decide upon the body responsible for coordinating the development of the web-based Regional Information System;

c) to set-up a Steering Committee for this project; and

d) to explore possible options and decide upon the body responsible for hosting and maintaining the web-based Regional Information System.

Action 8. Incorporate the Action Plan evaluation within the Barcelona Convention reporting system and procedure

The Action Plan is subject to periodic review to accommodate any developments on ballast water management at the regional or global level and adjusted / updated accordingly. The implementation of the Action Plan should be carried out under the coordination of REMPEC as a continuation of the present efforts of the Centre devoted to enhance expertise in the region on ballast water management issues. In addition,

[5] http://globallast.imo.org/index.asp?page=AwarenessMaterials.htm&menu=true

actions taken on a national level should be evaluated periodically under the Barcelona Convention to determine their effectiveness.

The Contracting Parties to the Barcelona Convention, agree

a) to mandate REMPEC to coordinate and assist with the implementation of the Action Plan in the region, in collaboration with the Regional Activity Centre for Specially Protected Areas (RAC/SPA) where relevant;

b) that REMPEC will inform its meetings of Focal Points, which take place every two years, on the status of implementation of the Action Plan, for subsequent transmission to the Ordinary Meetings of the Contracting Parties to the Barcelona Convention; and

c) to provide REMPEC with the relevant information on national-based activities with the purpose of reviewing and evaluating the ongoing relevance and overall effectiveness of activities carried out under the Action Plan.

**

Annex 1

Mediterranean Strategy and Action Plan on Ships' Ballast Water Management

Work Plan and Implementation Timetable

Action Points	Activities	Year				
		2011	2012	2013	2014	2015
1. Ratify the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention).	**a)** Form a national policy working group to lead the process towards the ratification of the BWM Convention.	✓	✓			✓
	b) Draft the instrument of ratification for adoption through the proper channels with the Government system.	✓	✓			
	c) Develop national legislation including fines for violators, which will give effect to the BWM Convention once ratified, as well as secondary regulations and technical arrangements for its enforcement.	✓	✓	✓	✓	✓
2. Adopt harmonised arrangements for ballast water exchange in the Mediterranean region.	**a)** Adopt harmonized voluntary arrangements for ballast water exchange in the Mediterranean region.	✓				
	b) Notify all interested parties of the adoption of harmonized arrangements for ballast water exchange in the Mediterranean region through notices to shipping and instructions to surveyors.	✓				

Action Points	Activities	Year				
		2011	2012	2013	2014	2015
3. Establish a solid compliance Monitoring and Enforcement (CME) system in the Mediterranean region.	**a)** Adapt existing Port State Control & CME systems to integrate the harmonized BWM CME procedures.	✓	✓	✓		
	b) Establish and maintain a regional communication system possibly within a clearing house mechanism (CHM), to allow exchange of experience and tracking of violations utilizing existing control bodies such as the Paris MoU on Port State control and the Mediterranean MoU on Port State Control.		✓	✓	✓	✓
4. Establish a survey, biological monitoring and risk assessment system for Mediterranean ports.	**a)** Develop a regionally standardised biological sampling and monitoring protocol for use of Contracting Parties in building the necessary biological and environmental databases to support the IAS management objectives.		✓	✓		
	b) Collaborate, preferably following sub-regional approaches where relevant, on biological survey and monitoring activities, including to promote and ensure sharing of technical capacity, resources and results.	✓	✓	✓	✓	✓
	c) Seek institutional support at the national level for port biological surveys and monitoring, as part of the national strategy for ballast water and IAS management.	✓	✓	✓	✓	✓
	d) Adapt and use the regional CHM for sharing of data related to port surveys and ongoing biological monitoring.		✓	✓	✓	✓
	e) Produce a regional-level risk assessment based on the information made available through biological surveys, as well as the shipping movement and ballast water discharge databases.		✓	✓		

Action Points	Activities	Year				
		2011	2012	2013	2014	2015
5. Enhance expertise; facilitate knowledge transfer and capacity building in the Mediterranean region.	**a)** Investigate the possibility of including training programmes and other capacity-building activities in the regular programme of work of the relevant Regional Activity Centres of MAP.	✓	✓			
	b) Seek and secure support, individually or through REMPEC, from the IMO Technical Cooperation Division, in support of activities of the Strategy and Action Plan.	✓	✓	✓	✓	✓
	c) Disseminate protocols and tools for standardization of technical approaches to regional and national activities.	✓	✓	✓	✓	✓
	d) Countries with specific expertise on ballast water management related activities help organise national, sub-regional or regional training sessions.	✓	✓	✓	✓	✓
	e) Replicate such training on a national level through the establishment of a national training programme on ballast water management activities.		✓	✓	✓	✓
6. Enhance public awareness on ships' ballast water and invasive alien species issues.	**a)** Use IMO Globallast Public awareness materials and translate these to local languages for dissemination at national level.	✓	✓	✓	✓	✓
	b) Carry out national seminars and workshops to raise awareness about the issue among various stakeholders.	✓	✓	✓	✓	✓
	c) Develop local case studies that may be used effectively for awareness and leveraging support within the Mediterranean region and its sub-regions.	✓	✓	✓	✓	✓

Action Points	Activities	Year				
		2011	2012	2013	2014	2015
7. Set-up a web-based Mediterranean mechanism for exchanging information.	**a)** Explore possible options and functionalities of the system and decide upon the body responsible for coordinating the development of the web-based Regional Information System.	✓	✓			
	b) Set-up a Steering Committee for this project.		✓			
	c) Explore possible options and decide upon the body responsible for hosting and maintaining the web-based Regional Information System.		✓	✓		
	d) Have the Regional Information System operational.				✓	✓
8. Incorporate the Action Plan evaluation within the Barcelona Convention reporting system and procedure.	**a)** Mandate REMPEC to coordinate and assist with the implementation of the Action Plan in the region, in collaboration with the Regional Activity Centre for Specially Protected Areas (RAC/SPA) where relevant.	✓				
	b) REMPEC to inform the Meeting of Focal Points, which takes place every two years, on the status of implementation of the Action Plan, for subsequent transmission to the Ordinary Meetings of the Contracting Parties to the Barcelona Convention.			✓		✓
	c) Forward to REMPEC the necessary information with the purpose of reviewing and evaluating the ongoing relevance and overall effectiveness of on national-based activities carried out under the Action Plan.	✓	✓	✓	✓	✓

**

Annex 3

Harmonized Procedures for a Regional Compliance Monitoring and Enforcement System

Introduction

1. The invasion of alien species into new marine environments through ships' ballast water and sediments consist one of the greatest threats for the coastal and sea ecosystems. It is estimated that 3-5 billion tonnes of ballast water are carried annually by ships worldwide. While ballast water is of high importance to the operation of a ship, it is, at the same time, a great environmental threat due to the fact that over 7000 kinds of different microbes, plants and animals are being transferred worldwide every year. The introduction of the above-mentioned organisms into a new marine ecosystem may disturb its balance and affect the economic activities mainly, in the sectors of fishery and tourism, and it may cause illnesses or even death to human populations.

2. It is a matter of high priority that a State develops firstly compliance monitoring and enforcement measures (CME) in line with port State control guidelines developed by IMO[14], and secondly includes research and constant monitoring measures, with view to developing sufficient knowledge concerning the introduction of new organisms in terms of types, ports of origin and possible effect on the local marine environment, which will aid the risk assessment process and refine any CME requirements This information is especially important when interim measures are being considered in order to mitigate the risk of new invasions.

3. Effective communication arrangements should be established on the regional level to ensure proper tracking of violation and the exchange of experience during the application of the CME.

A. Aims of a Ballast Water Compliance Monitoring and Enforcement (CME) System.

4. A CME is the essential component of the overall Ballast Water Management regime or National Strategic Framework designed to assess whether or not a ship has met the IMO Convention's and ports state's BWM requirements, and where necessary, enforce these requirements. There are various mechanisms which a competent authority can use to satisfy itself that the rules and requirements are being met. These may involve sampling or testing, auditing of records, observation or any other action or a combination of these actions and may vary from one country or region to another. The CME will also change in time when the BWM Convention is ratified.

5. A Ballast Water CME System aims at two things:

1. assess the ship's compliance with the requirements of Ballast Water Management Convention; and

2. gather data from the ship (such as the port of origin of ballast water, ballast water treatment regime, volume of untreated water to be discharged, where and when the discharge is likely to take place, amongst others) so that the port State, in the interim period prior to the BWM Convention coming into, force can:

- identify the risk of harmful aquatic organisms being introduced into an area through the ballast water tanks of a ship ;
- undertake risk assessments for the interim management of the risks posed by ballast water as a vector for the movement of non-indigenous species; and,
- Identify phytoplankton toxic organisms or other organisms that could be dangerous to pub-

[14] These guidelines are expected to be finalized by IMO during 2012.

lic health (e.g. fish-shell toxins) and potentially be imported into the region through ballast water, and analysis of their potential effects (ecological and socio-economic).

6. The collection of this data after the BWC comes into force will also contribute to the formation and development of exemptions and additional measures.

7. In addition, in order to undertake risk assessments and decide upon management measures, a CME should be backed up with research on:

- the distribution of harmful aquatic organisms (native, non native cryptogenic) in a port or a sea area.
- gathering data on species in the port of origin of ballast water being discharged in their ports.

B. Components of a Ballast Water Compliance-Monitoring and Enforcement System.

i. Actions by Competent National Authorities

8. The competent Port State Authorities may sample or require samples of ballast water and sediments as part of port State Control enforcement of the BWM Convention, once the Convention has entered into force. It should be noted that guidance on port State control for the BWM Convention is being developed at the present time at the IMO. Port State control is likely to take the form of an initial check of the documentation, the certification of the equipment and the state of the equipment. This will only be backed up with indicative analysis or full sampling if the port State control Officer suspects that there is a problem and cannot find clear grounds in the initial inspection that the ship does not comply with the BWM Convention. Additionally, the port State may wish to target the ship due to previous issues or reports from third countries. Work is being completed at IMO on when and how indicative analysis/full scale testing should be undertaken.

9. Additionally competent National Authorities may require or ask vessels to provide information on exchange or samples in order to collect data for research undertaken to mitigate risk. This can be done on a ballast water reporting form which can be used to check if the ship has applied any interim management requirements set by the port State. However, unless the collection of this information is enshrined in local or national regulations, this submission of information or access to the ship to take samples cannot be made mandatory. It should be noted that there is no requirement to report within the IMO Ballast Water Management (BWM) Convention.

ii. Sample Analysis of Ballast water to check that the D-1 Standard has been met

10. Relative simple and quick salinity tests or other indicators of exchange (e.g. Coloured Dissolved Organic Matter), may be able to verify if exchange has been performed (D1-standards) and the ballast water was sourced from the location reported by the ship, or not.

11. However, this is only an indicator and should not be relied upon as the sole basis for enforcement action, as ballast water exchange in specific sea areas has limitations with respect to the safety and stability of the ship and the time needed to exchange water to meet the requirements of the BWM Convention's D-1 Standard (ships may not be able to complete exchange during very short voyages). In such cases the ship should not be penalised for not exchanging their ballast water to the BWM Convention's standards.

iii. Sample Analysis of Ballast water to check that the D-2 Standard has been met

12. In case that the Port State authority wants to check if the vessel is in compliance with the D-2 standard of the BWM Convention, then detailed sampling and testing for compliance with the D-2 Standard should be performed. Guidelines on sampling were developed under the aegis of IMO, namely the "Guide-

lines for Ballast Water Sampling (G2)", and further guidance is being developed by the same organisation at the present time on indicative analysis (methods of analysing ballast water quickly), which would speed up the sampling and analysis process.

13. If port State Control identifies that sampling and analysis of ballast water and sediments samples is needed, specialist experts such as marine scientists and technicians, who have the appropriate training needed to work onboard ships, should undertake this. Therefore, arrangements with an accredited technical institute/ university or with an accredited laboratory to carry out the analysis may be required. Moreover, the most critical aspect of such analysis is the number of organisms in the discharge and the organisms' viability, however, it is important to highlight that this sampling and analysis of organisms in the ballast water could be difficult to accomplish without delaying a ship especially in remote ports.

14. During the sampling, analysis of the following suggested parameters should be taken into account:
    1. Bacteria and other pathogens in the D-2 Standard;
    2. Number of organisms >50 μm , specifically checking of viability of species; and,
    3. Number of organisms <50 and >10 μm, specifically checking of viability of species.

15. The sampling and analysis of ships' ballast water should follow standardized official methods, some of which are still in development. This is important to assure the quality of the results globally and will provide support to any enforcement action.

iv. Sediments and ships ballast water tanks being cleaned or repaired

16. According to Article 5 of the Convention, Parties should designate those ports and terminals where cleaning or repair of Ballast tanks occurs, so that adequate facilities will be provided with the entry into force internationally of the BWM Convention for the reception of sediments from ships calling at those ports of terminals, taking into account the respective guidelines being developed by the IMO. Countries in the region are invited to provide information on the availability of port reception facilities for sediment, so cleaning or repair of ballast tanks can occur in Mediterranean Ports.

v. Other Research

17. In order to help risk assessments for the development of interim measures, additional measures or exemptions, information should be collected on the biology and physicochemical properties of water and sediments in ports (port of departure and port of arrival). In case that this isn't feasible in an area, any available published information should be reviewed. Furthermore, this monitoring should be linked with an alert system so that ships taking up ballast water in an area of concern can be subjected to appropriate emergency ballast water management methods, depending on the nature of the risk that has been identified.

18. Any observation of new invasive alien species should be shared with other port States within the region and added to relevant global databases on the invasion of alien species. This will also help the international shipping industry and Port Authorities to be informed on any increase of invasive alien species in certain areas and to enable the authorities in the area to notify ships with additional information on pertinent ballast water management.

C. Enforcement measures and possible types of violations.

19. Enforcement measures should be applied in case it is established that a ship is non- compliant, i.e. the ship is in violation of the BWM requirements of the BWM Convention and/or any other requirements of the port State, such as ballast water emergency measures, ballast water exchange zones or additional measures (given that such requirements have been communicated to the ship before arrival by the Port State).

20. In the event that samples are found not to meet the BWM Convention's D1 or D2 standards during port State control, either through "clear grounds" identified in port State control, or through indicative analysis or full scale/indicative sampling, the ship may be required to stop the discharge of Ballast Water in a port. If this is the case then the ship would have to fix the problem before continuing to discharge ballast water. Additionally, Port State authorities should avoid undue delays to ships when taking any samples. Actions taken towards ships violating the BWM Convention should be in the form of penalties and sanctions which must be backed up by national law and should be proportional to the level of violation.

21. Non-compliance situations (Violations) can be divided into two types:

1. Non compliance resulting in potential risks which could be:

   - a situation outside the control of the ship, for example where severe weather conditions have prevented a ship from managing its ballast water as required by the Port State, or
   - deliberate non-compliance with the Port State's BWM requirements.

2. Non-compliance NOT resulting in potential risks such as:

   - Incomplete record keeping by a ship with a strong record of compliance.

22. Each situation of non-compliance should be treated on its merits with all factors being taken into account before any enforcement action is taken. Penalties and sanctions could be applied with different levels ranging from none in cases of situations outside the control of the ship, to very high in cases of deliberate non compliance such as deliberate discharge of untreated/un-exchanged ballast water with full knowledge of the Port state BWM requirements.

23. It is recommended that the penalties and sanctions regime set up for the BWM Convention is aligned with any existing penalties and sanctions applied to shipping for other MARPOL related violations.

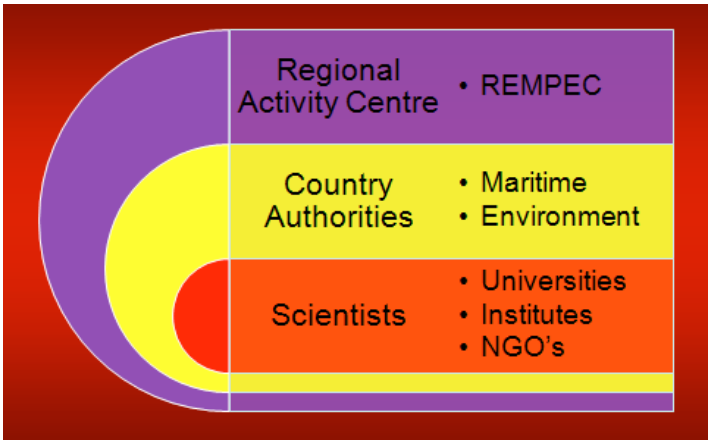
* *

Annex 4

Web-based Mediterranean information exchange system

INFORMATION EXCHANGE SYSTEM

An appropriate mechanism for exchanging information is a web based system that covers all kind of information which will be collected by the contribution of Contracting Parties to the Barcelona Convention (hereafter referred as the "Parties"). The data input to the system will be elaborated by three streams:

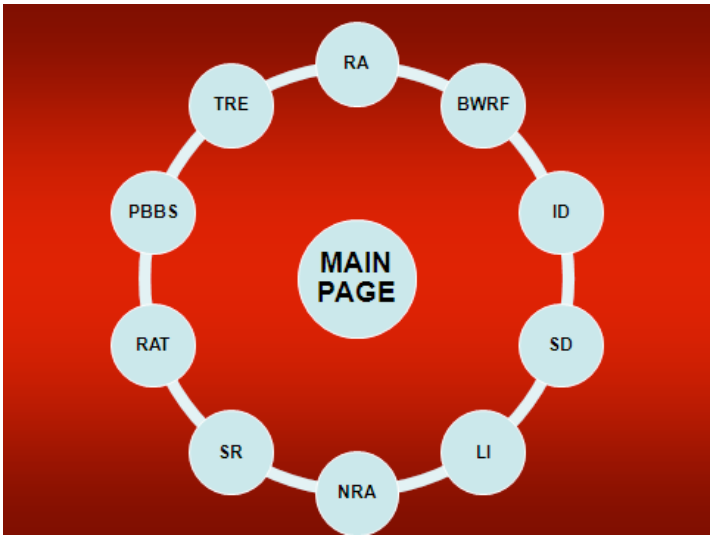


The scientific institutes of the Parties will produce relevant information. This information will be coordinated and evaluated by the governmental authorities of the Parties. The Regional Activity Centre is a gatherer body which also makes a gap analysis and makes coordination in order to produce incomplete information.

SYSTEM ARCHITECTURE

The system will be used via internet. Each Party could enter the system by using one username and password.

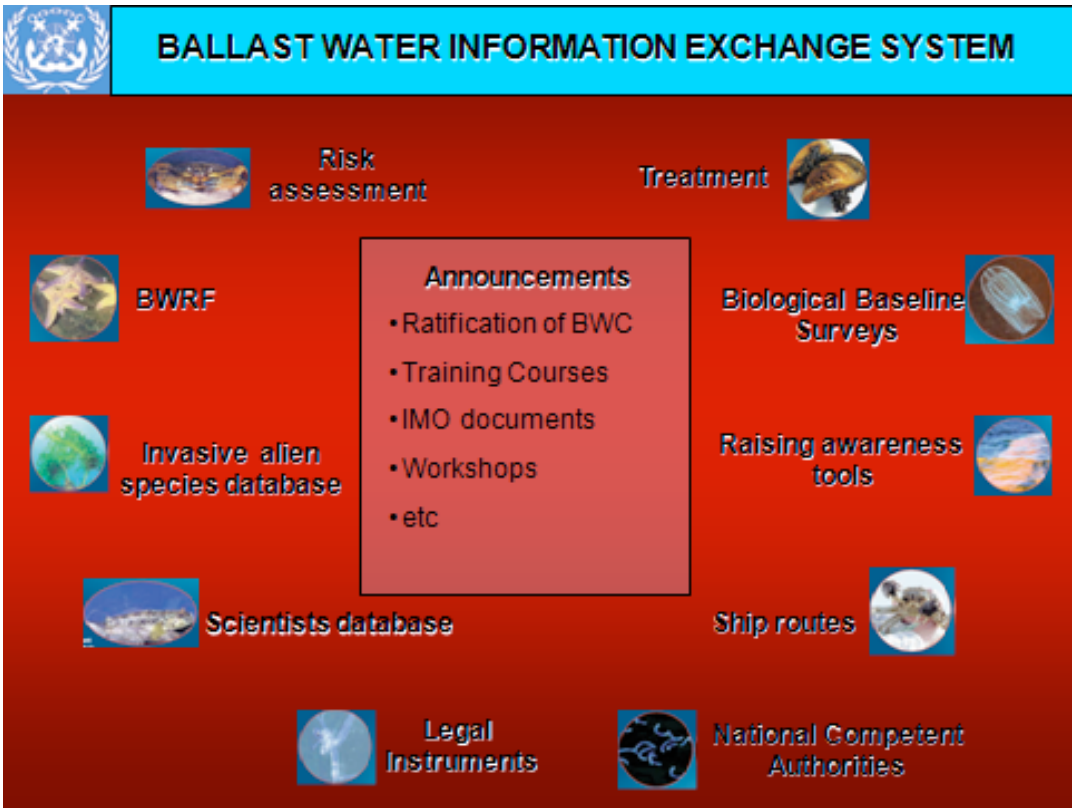
It will contain a home page from which one can access to the information module pages. Ten information modules were defined.



These ten modules are as follows:

1. Risk assessment
    a. Risk assessment of Ports of the Contracting Parties to the Barcelona Convention
    b. Risk assessment methodologies, guidelines
    c. Results of risk assessment studies done by other countries from other Regions and Regional or intergovernmental Regional Organizations
    d. Target invasive alien species
2. Ballast Water Reporting Form
    a. Ballast water reporting form system
    b. Statistical results of ballast water discharges
3. Invasive alien species Database
    a. Searching by name and habitat
4. Scientists database
5. Legal Instruments
    a. Ballast Water Management Convention
    b. Guidelines
    c. National legal instruments
6. National Competent Authorities
    a. Globallast Partnership Focal Points
    b. Maritime Authorities
    c. Scientific Institutes
7. Ship routes
8. Raising awareness tools
9. Port biological baseline surveys
    a. Port biological baseline survey guideline
    b. PBBS Workshop presentations
    c. PBBS Studies
10. Treatment
    a. Treatment system inventory
    b. IMO approval procedure
    c. Systems approved by the Contracting Parties to the Barcelona Convention

HOME PAGE WHERE THE LINKS OF THE GENERAL INFORMATION MODULES ARE LOCATED



This page provides icons in order to reach the information modules. The GISIS system of the IMO was designated as an example for this system. One can reach each module by clicking on the relative icon. Moreover, some announcements and news about the activities on ballast water management could be placed on the centre of the page.

Module 1- RISK ASSESSMENT

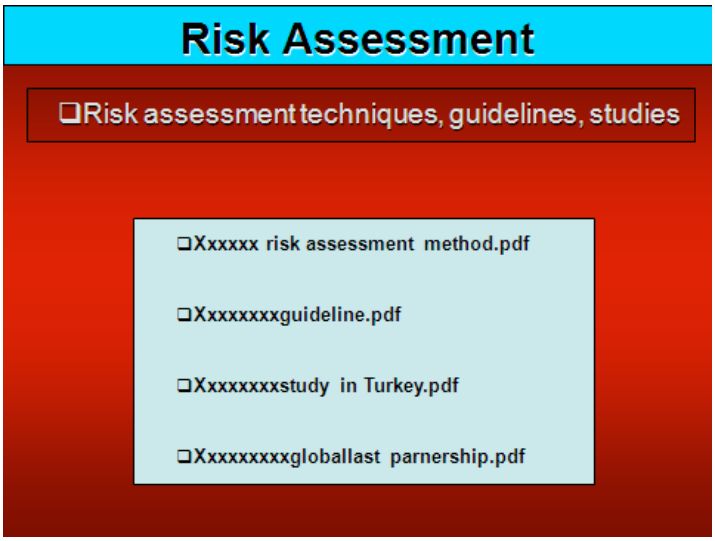
The Mediterranean region needs a detailed ballast water risk assessment study in order to develop the ballast water management system. Also, all the scientific works, studies and guide documents should be collected together in order to assist the relevant national competent authorities. The data are collected under three titles:

Risk Assessment Study in the Ports of the Contracting Parties to the Barcelona Convention:

"Risk assessment Study of the Ports of the Contracting Parties to the Barcelona Convention" includes a database for the risk assessment results. The ports can be chosen with the action bar. After choosing the port the hereunder results will be showing.

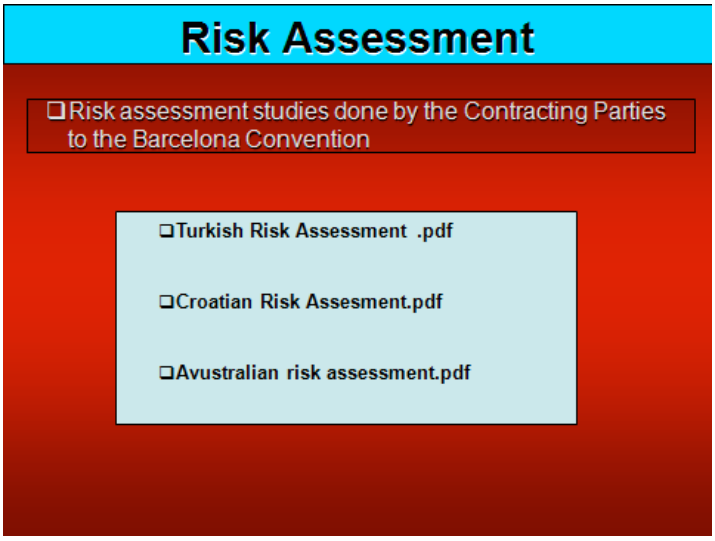
Risk Assessment methodologies, guidelines:

Under this title, relevant information documents, guidelines and workshop presentations can be found in pdf format.

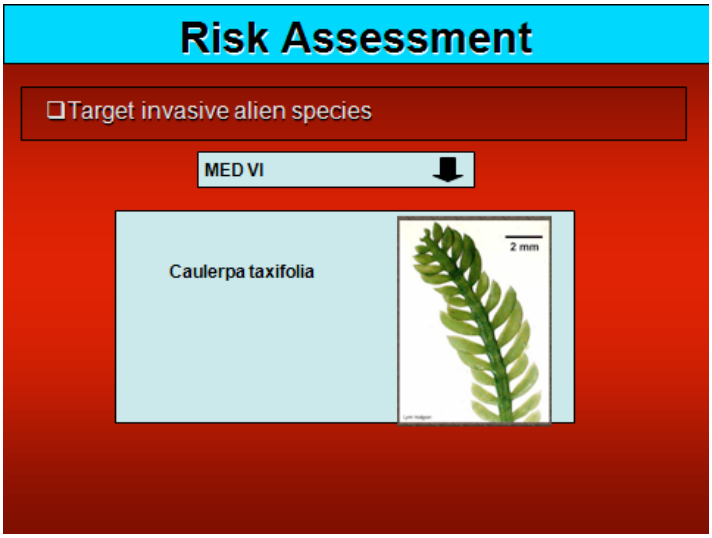


The results of risk assessment studies done by countries from other Regions and Regional or intergovernmental Regional Organizations:

Also, the risk assessment studies done by countries from other Regions and Regional or intergovernmental Regional Organizations could be found in a different page.



The target invasive alien species can be found with respect to the biological region.

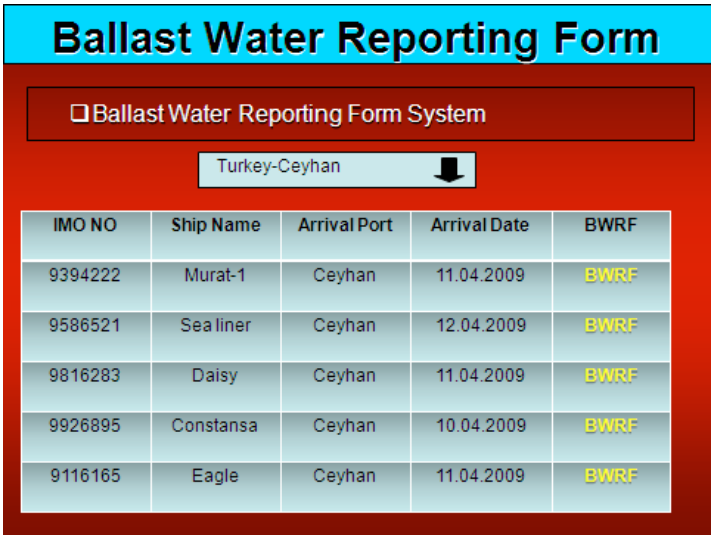


Module 2- BALLAST WATER REPORTING FORM

One of the most important inputs into the ballast water management system is the information which could be obtained from the ballast reporting forms. The origin and volume of ballast water discharged to the Ports of Parties can be easily provided from the reporting forms. The data provided from the forms is a very important input for ballast water risk assessment studies. A web based system should be designed in order to collect the ballast water reporting forms. The ships or the agents of the ships or the harbour masters of the ports of Parties could record the data to the system.

Ballast Water Reporting Form System

The ballast water reporting forms can be reached with the action bar by choosing the ports.



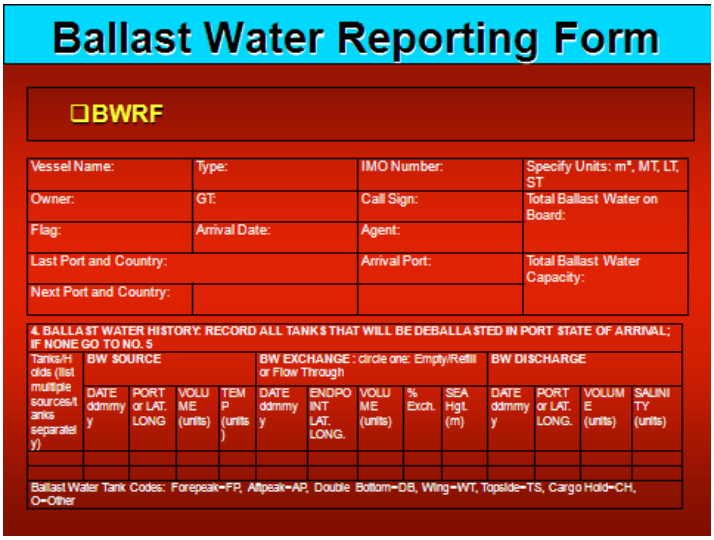
Ballast Water Reporting Form

Ballast Water Reporting Form System

Turkey-Ceyhan

IMO NO	Ship Name	Arrival Port	Arrival Date	BWRF
9394222	Murat-1	Ceyhan	11.04.2009	BWRF
9586521	Sea liner	Ceyhan	12.04.2009	BWRF
9816283	Daisy	Ceyhan	11.04.2009	BWRF
9926895	Constansa	Ceyhan	10.04.2009	BWRF
9116165	Eagle	Ceyhan	11.04.2009	BWRF

After choosing the port from the action bar, all the ships calling that port will be shown. It can be reached to the original ballast water reporting form by clicking the yellow BWRF icon. Entries related to flag on BWRF shall use only official names of States as recognized by the United Nations chosen only from action bars. The user chooses the arrival and departure port only from action bars. Parties will confirm the names of their ports.



Ballast Water Reporting Form

BWRF

Vessel Name:	Type:	IMO Number:	Specify Units: m³, MT, LT, ST
Owner:	GT:	Call Sign:	Total Ballast Water on Board:
Flag:	Arrival Date:	Agent:	
Last Port and Country:		Arrival Port:	Total Ballast Water Capacity:
Next Port and Country:			

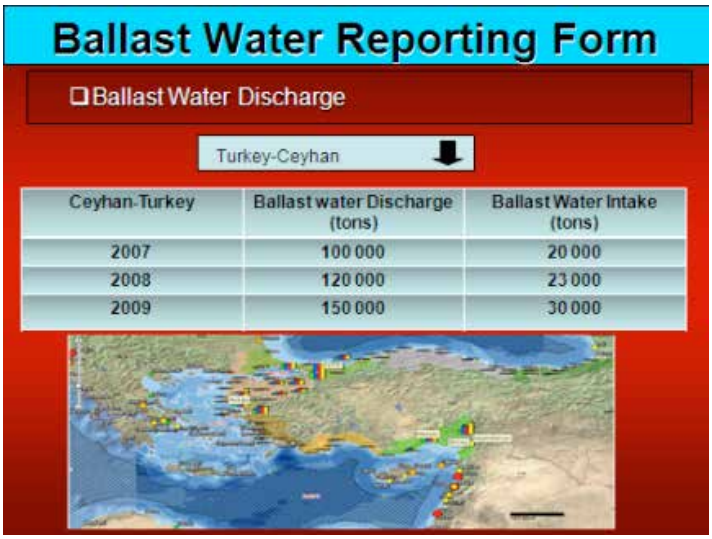
4. BALLAST WATER HISTORY: RECORD ALL TANKS THAT WILL BE DEBALLASTED IN PORT STATE OF ARRIVAL; IF NONE GO TO NO. 5

Tanks/Holds (list multiple sources/tanks separately)	BW SOURCE				BW EXCHANGE : circle one: Empty/Refill or Flow Through					BW DISCHARGE			
	DATE ddmmmy	PORT or LAT. LONG	VOLUME (units)	TEMP (units)	DATE ddmmmy	ENDPOINT LAT. LONG.	VOLUME (units)	% Exch.	SEA Hgt. (m)	DATE ddmmmy	PORT or LAT. LONG.	VOLUME (units)	SALINITY (units)

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

The Statistical Results for Ballast Water Discharges

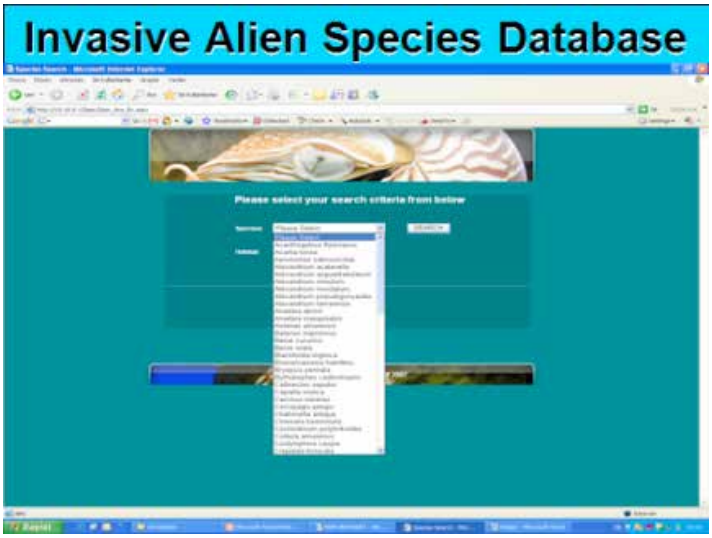
There is an instrument which can collect the data from online BWRF's and draw graphics with respect to the ports chosen from the action bar.



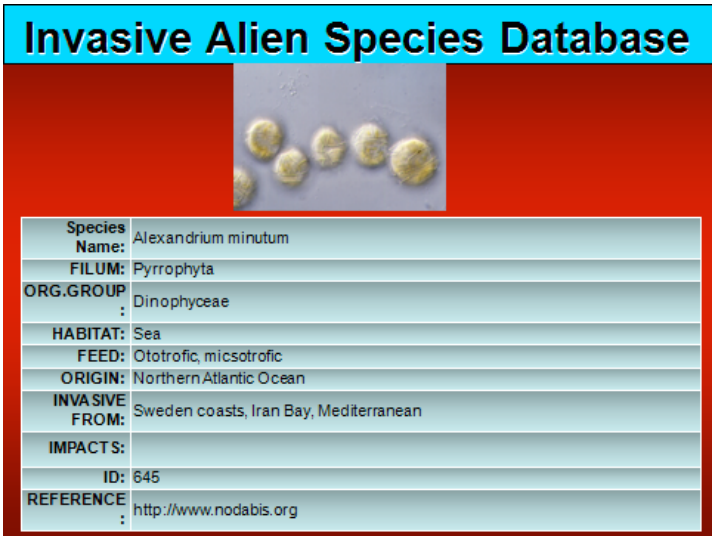
Ceyhan-Turkey	Ballast water Discharge (tons)	Ballast Water Intake (tons)
2007	100 000	20 000
2008	120 000	23 000
2009	150 000	30 000

Module 3- INVASIVE ALIEN SPECIES DATABASE

This module consists of a data base of the invasive alien species spread globally. It contains every kind of information about the invasive alien species.

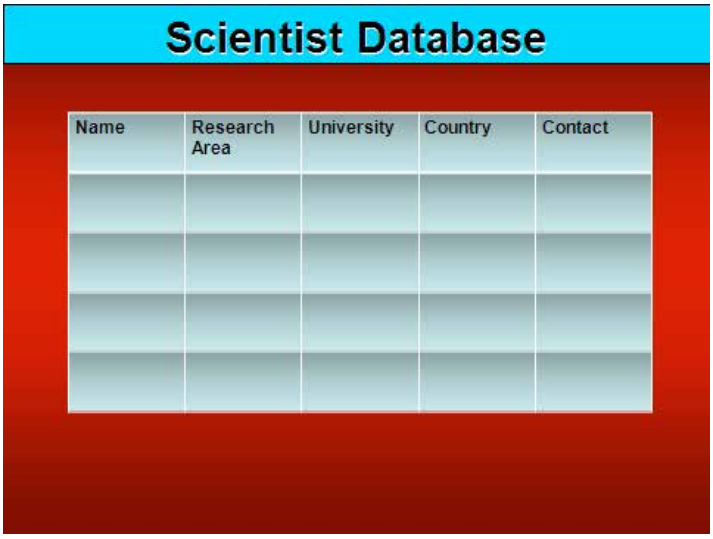


Again an action bar is used to choose the species from name. It will also have a searching device from habitat. After choosing the species, the page of the species will be opened that contains picture and information about the species.



Module 4- SCIENTISTS DATA BASE

In this module all of the scientists who are working on invasive alien species are going to be put in together. Parties are only allowed to include details of scientists/universities resident/situated in their territory.



Module 5- LEGAL INSTRUMENTS

All the IMO publications and the national legal instruments of the Parties will be located here in pdf format.

Module 6- NATIONAL COMPETENT AUTHORITIES

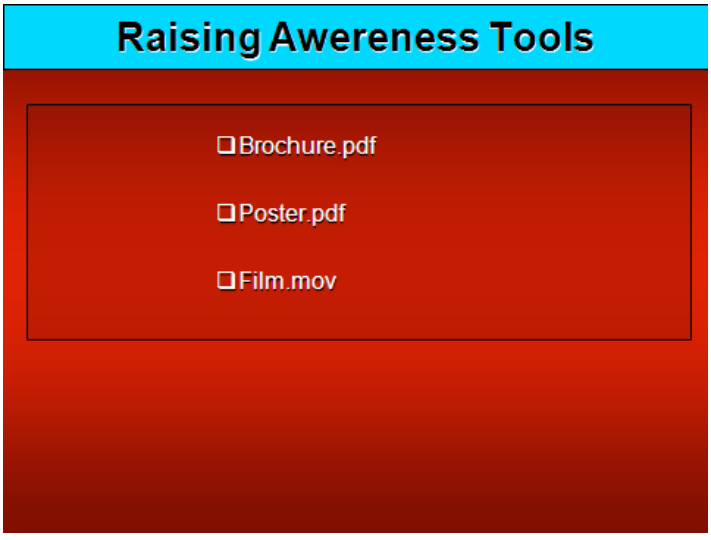
In this module all the contact details of the national authorities of the Parties will be collected.

Module 7- SHIP ROUTES

An analysis instrument will be produced in order to determine the exchange limitations of the routes. The user only chooses the arrival and departure port from action bars. Parties will confirm the names of their ports. The instrument calculates the estimated arrival time and the possibility of the exchange.

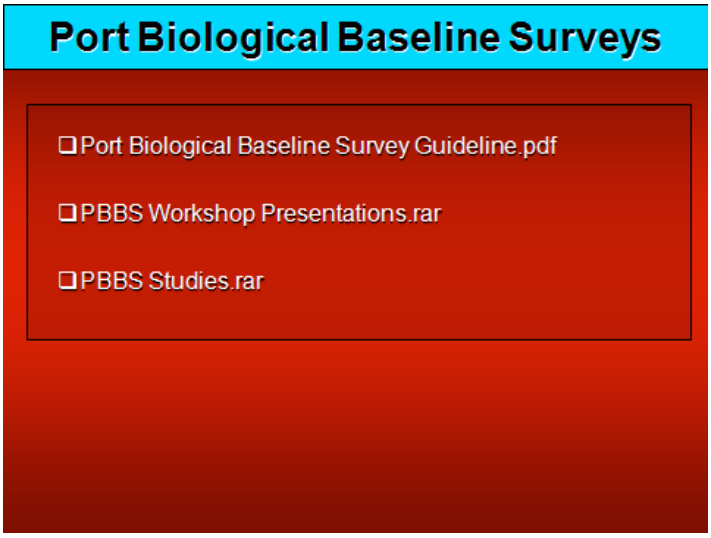
Module 8- RAISING AWARENESS TOOLS

All the media instruments produced by the Parties could be placed on this module.



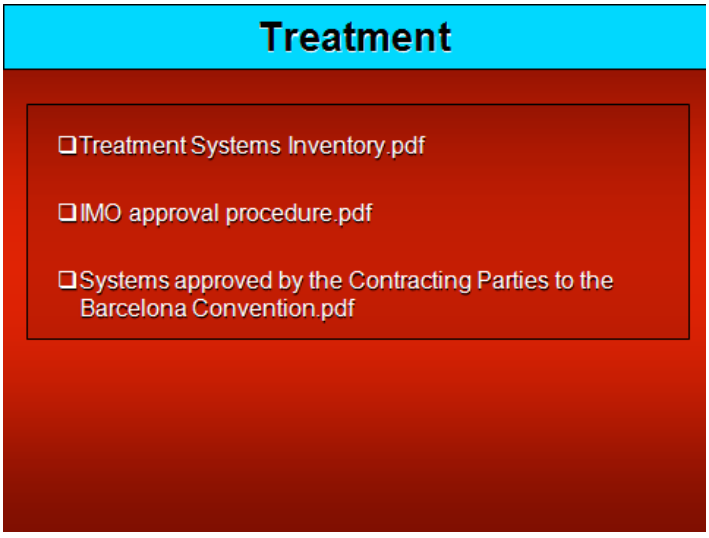
Module 9- PORT BIOLOGICAL BASELINE SURVEYS

In this module, all the documents concerning the port baseline surveys of Parties could be collected.



Module 10-TREATMENT

In this module all the documents concerning the ballast water treatment activities could be collected.



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ANNEX II

GENERAL GUIDANCE ON THE VOLUNTARY INTERIM APPLICATION OF THE D1 BALLAST WATER EXCHANGE STANDARD BY VESSELS OPERATING BETWEEN THE MEDITERRANEAN SEA AND THE NORTH-EAST ATLANTIC AND/OR THE BALTIC SEA

(Omissis)

(for the text, see paragraph 3.3 of this book)

3.2 Harmonized Voluntary Arrangements for Ballast Water Management in the Mediterranean Region

IMO BWM .2/Circ. 35 of 15 Agust 2011

Communication received from the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC)

1 A communication has been received from the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) on behalf of the following Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention): Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, the Libyan Arab Jamahiriya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia and Turkey.

2 The communication contains the Harmonized Voluntary Arrangements for Ballast Water Management in the Mediterranean Region (in English and French) adopted by the abovementioned Contracting Parties, which provide guidance for voluntary ballast water exchange and management options to vessels transiting the Mediterranean Sea area. The arrangements are of voluntary interim nature and will be applicable from 1 January 2012 until the time that the Ballast Water Management Convention enters into force.

3 At the request of the Administrations of the abovementioned Contracting Parties, the communication annexed hereto is circulated to Member States for their information and future action as appropriate.

* * *

ANNEX 1

HARMONIZED VOLUNTARY ARRANGEMENTS FOR BALLAST WATER MANAGEMENT IN THE MEDITERRANEAN REGION (ENGLISH VERSION)

Introduction

The harmonised voluntary interim regime is being submitted under paragraph 3 of Article 13 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention) whereby Parties with common interest to protect the environment, human health, property and resources, particularly those bordering enclosed or semi- enclosed seas, shall endeavour to enhance regional cooperation, including through the conclusion of regional agreements consistent with the Convention. The proposed arrangements take into account other adopted regional policies on ship's ballast water exchange.

The regime forms also part of a regional strategy on ships' ballast water management, developed within the Mediterranean Action Plan[1], with the technical support of the GloBallast Partnerships Project[2]. It is based on the requirements of the Ballast Water Management Convention and is being proposed as an interim regime. The regime is voluntary; therefore, ships entering the Mediterranean Sea area are encouraged to apply these guidelines on a voluntary basis as from [XXXXXXXX].

[1] The Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) are the following: Albania, Algeria, Bosnia & Herzegovina, Croatia, Cyprus, Egypt, the European Community, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Morocco, Montenegro, Slovenia, Spain, Syria, Tunisia and Turkey.

[2] GEF/UNDP/IMO project "Building partnerships to assist developing countries to reduce the transfer of harmful aquatic organisms in ship's ballast water (Globallast Partnerships)".

This regime will no longer apply when a ship meets the ballast water performance standard contained in regulation D-2 of the Convention, or when the Convention comes into force and a ship has to apply the D-2 standard in accordance with the application dates set out in regulation B-3 of the Convention.

Definitions

Convention means the International Convention for the Control and Management of Ships' Ballast Water and Sediments; and is hereunder referred to as "Ballast Water Management Convention";

Mediterranean Sea area means the Mediterranean Sea proper including the Gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41° N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 005°36' W;

Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°;

Red Sea area means the red sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28'.5 N, 043°19'.6 E) and Husn Murad (12°40'.4 N, 043°30'.2 E).

1. Ships entering the waters of Mediterranean Sea area from the Atlantic Ocean (Straits of Gibraltar), or from the Indian Ocean through the Red Sea (Suez Canal) or leaving the waters of the Mediterranean Sea area to the Atlantic Ocean (Strait of Gibraltar) or to the Indian Ocean through the Red Sea (Suez Canal), should:

(a) undertake ballast water exchange before entering the Mediterranean Sea area, or after leaving the Mediterranean Sea area, as applicable, according to the standard set out in the D-1 Standard of the Ballast Water Management Convention, and at least 200 nautical miles from the nearest land and in waters at least 200 meters in depth[3];

(b) in situations where this is not possible, either due to deviating the ship from its intended voyage or delaying the ship, or for safety reasons, such exchange should be undertaken before entering the Mediterranean Sea area, or after leaving the Mediterranean Sea area, as applicable, according to the standard set out in the D-1 Standard of the Ballast Water Management Convention, as far from the nearest land as possible, and in all cases in waters at least 50 nautical miles from the nearest land and in waters of at least 200 meters depth[4].

2. Ships should, when engaged in traffic between:

i. ports located within the Mediterranean Sea area; or

ii. a port located in the Black Sea area and a port located in the Red Sea area; or

iii. a port located in the Black Sea and a port located in the Mediterranean Sea area; or

iv. a port located in the Red sea area and a port located in the Mediterranean Sea area.

(a) undertake ballast water exchange as far from the nearest land as possible, and in all cases in waters at least 50 nautical miles from the nearest land and in waters of at least 200 meters depth. The areas, one of which being unfit for ballast water exchange due its size, where such requirements are met in the Mediterranean Sea area, appear in the map provided in **Appendix**;

(b) in situation where this is not possible either due to deviating the ship from its intended voyage or delaying the ship, or for safety reasons, exchange of ballast water should

[3] These geographical parameters are those set by Regulation B-4.1.1 of the Ballast Water Management Convention.

[4] These geographical parameters are those set by Regulation B-4.1.2 of the Ballast Water Management Convention.

be undertaken in areas designated by the port State for that purpose[5];

and, if a port State decides to designate a ballast water exchange areas,

(c) such areas shall be assessed in accordance with the *Guidelines on designation of ballast water areas for ballast water exchange* developed by the International Maritime Organization[6], and in consultation with adjacent States and all interested States.

3. Sediments collected during the cleaning or repairing operations of ballast tanks should be delivered in sediment reception facilities in ports and terminals, according to Article 5 of the Ballast Water Management Convention, or be discharged beyond 200 nautical miles from the nearest land of the coastline when the ship is sailing in the Mediterranean Sea area.

4. Exemptions can be granted to a ship on a voyage between specified ports or locations within the Mediterranean Sea area, or to a ship operating exclusively between specified ports or locations within the Mediterranean Sea area. These exemptions are to be granted according to Regulation A-4 1 of the Ballast Water Management Convention and based on the *Guidelines for risk assessment under regulation A-4 of the BWM Convention* developed by the International Maritime Organization[7].

5. As per Regulation B-4 of the Ballast Water Management Convention, if the safety or stability of the ship is threatened by a ballast water exchange operation, this operation should not be undertaken. The reasons should be entered in the ballast water record book and a Report should be submitted to the maritime authorities of the Port of destination.

6. Each vessel calling at a port within the Mediterranean Sea area is required to have on board a Ballast Water Management Plan complying with requirements of the *Guidelines for Ballast Water Management and Development of Ballast water Management Plans* developed by the International Maritime Organization[8] and to keep a record of all ballast water operations carried out.

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5 Regulation B-4.2 of the Ballast Water Management Convention.

6 Guidelines on Designation of Ballast Water Areas for Ballast Water Exchange (G14), adopted on 13 October 2006. Resolution MEPC.151(55).

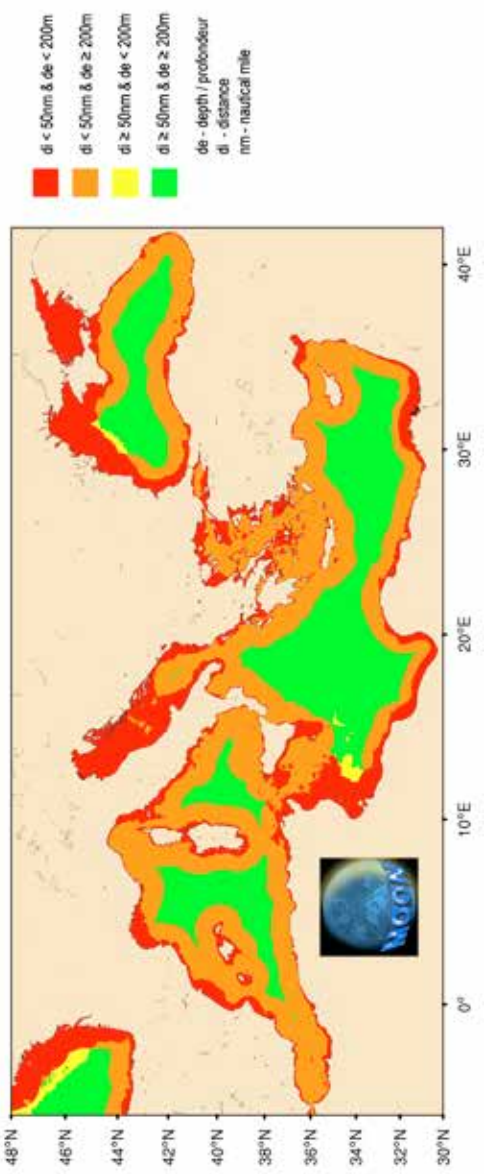
7 Guidelines for Risk Assessment under Regulation A-4 of the BWM Convention (G7), adopted on 13 July 2007.

8 Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4), adopted on 22 July 2005. Resolution MEPC.127(53).

* *

Appendix

Areas in the Mediterranean Sea meeting the requirements set out in Regulation B-4.1.2 of the Ballast Water Management Convention (at least 50 nautical miles from the nearest land in waters of at least 200 meters depth)



3.3 General Guidance on the Voluntary Interim Application of the D-1 Ballast Water Exchange Standard by Vessels Operating Between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea

IMO BWM.2/Circ.39 - Communication received from the Administration of Croatia

1. A communication has been received from the Administration of Croatia on behalf of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention), the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) and the Convention for the Protection of the Marine Environment of the Baltic Sea (HELCOM Convention). The Contracting Parties to the Barcelona, OSPAR and HELCOM Conventions that are also Member States of the IMO are Albania, Algeria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Libya, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Morocco, the Netherlands, Norway, Poland, Portugal, the Russian Federation, Slovenia, Spain, Sweden, Switzerland, the Syrian Arab Republic, Tunisia, Turkey and the United Kingdom of Great Britain and Northern Ireland.

2. The communication contains general guidance on the voluntary interim application of the Ballast Water Exchange Standard contained in regulation D-1 of the BWM Convention by vessels operating between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea. The guidance is of voluntary interim nature and will be applicable from 1 October 2012.

3. At the request of the Administration of Croatia, the communication annexed hereto is circulated to Member States for their information and future action as appropriate.

***

ANNEX

ANNEX II

"GENERAL GUIDANCE ON THE VOLUNTARY INTERIM APPLICATION OF THE D1 BALLAST WATER EXCHANGE STANDARD BY VESSELS OPERATING BETWEEN THE MEDITERRANEAN SEA AND THE NORTH-E AST ATLANTIC AND/OR THE BALTIC SEA"

"General Guidance on the Voluntary Interim Application of the D1 Ballast Water Exchange Standard by vessels operating between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea"

1. In anticipation of the coming into force of the International Maritime Organization's International Convention for the Control and Management of Ships' Ballast Water and Sediments (the BWM Convention), vessels operating between the marine areas as defined further in point 3, would be expected to apply on a voluntary basis, as from [XXXXXXXX], the following guidelines to reduce the risk of non-indigenous species invasion through ballast water. The guidelines are addressed to the vessels covered by Article 3 of the BWM, taking into account the exceptions in Regulation A-3 of that Convention. This Guidance does not replace the requirements of the BWM Convention, but provide the part of interim Ballast Water Regional Management Strategies for the Baltic Sea, the Mediterranean Sea and the North-East Atlantic being developed under Article 13 (3) of the BWM Convention by the contracting parties to either the OSPAR Convention, the Helsinki Convention or the Barcelona Convention*. This Guidance will no longer apply when a ship is in a position to apply the D-2 Standard of this Convention, or the Ballast Water Management Convention comes into force and a ship has to apply the D-2 Standard.

* Albania, Algeria, Belgium, Bosnia and Herzegovina, Croatia, Denmark, Egypt, Estonia, The European Union, Finland, France, Germany, Iceland, Ireland, Israel, Latvia, Lebanon, Libyan Arab Jamahiriya, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Morocco, The Netherlands, Norway, Poland, Portugal, The Russian Federation, Serbia, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, and the United Kingdom of Great Britain and Northern Ireland.

2. If the safety of the vessel is in any way jeopardised by a ballast water exchange, it should not take place. Additionally these guidelines do not apply to the uptake or discharge of ballast water and sediments for ensuring the safety of the vessel in emergency situations or saving life at sea in the waters of the Mediterranean Sea, the Baltic Sea and the North East Atlantic.

3. Definitions:

- **North-East Atlantic**:
  - o those parts of the Atlantic and Arctic Oceans and their dependent seas which lie north of 36° north latitude and between 42° west longitude and 51° east longitude (but excluding the Baltic Sea and the Belts lying to the south and east of lines drawn from Hasenore Head to Gniben Point, from Korshage to Spodsbjerg and from Gilbjerg Head to Kullen, and the Mediterranean Sea and its dependent seas as far as the point of intersection of the parallel of 36° north latitude and the meridian of 5° 36' west longitude);
  - o that part of the Atlantic Ocean north of 59° north latitude and between 44° west longitude and 42° west longitude.
- **The Baltic Sea**:
  - o the Baltic Sea and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57 44.43'N; and,
- **The Mediterranean Sea**:
  - o the maritime waters of the Mediterranean Sea proper, including its gulfs and seas, bounded to the west by the meridian passing through Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between the Mehmetcik and Kumkale lighthouses.

4. Each vessel operating in these waters should:

- have a Ballast Water Management Plan which complies with the Guidelines for ballast water management and development of ballast water management plans (G4) (IMO resolution MEPC.127(53)); and,
- record all ballast water operations in a ballast water record book.

5. Vessels leaving the Mediterranean Sea and proceeding to destinations in the North-East Atlantic or the Baltic Sea should exchange all their ballast tanks to the standards set out by the D-1 Standard of the Ballast Water Management Convention, at least 200 nautical miles from the nearest land in water at least 200 metres deep, as soon as they enter the North-East Atlantic. It should be noted that the best place to do this is in waters that meet these criteria to the west of Portugal, Spain and France, as most of the waters of the English Channel and its approaches, the North Sea and the Baltic Sea are less than 200m deep. A map identifying these areas can be found in Figure 1[1].

6. Vessels entering the Mediterranean Sea from the North-East Atlantic or the Baltic Sea and proceeding to destinations in the Mediterranean Sea, the Black Sea or elsewhere should exchange all their ballast tanks to the standards set out by the D-1 Standard of the Ballast Water Management Convention, at least 200 nautical miles from the nearest land in water at least 200 metres deep, before they leave the North-East Atlantic. A map identifying these areas can be found in Figure 1.

[1] For vessels leaving the Mediterranean or the North-East Atlantic proceeding to destinations near Tarrifa Cape a different regime for ballast water exchange could be considered.

7. If, for operational reasons, exchange is not possible at least 200 nautical miles from the nearest land in water at least 200 metres depth, then such exchange should be undertaken as far from the nearest land as possible outside the Mediterranean Sea, and in all cases in waters at least 50 nautical miles from the nearest land in waters of at least 200 metres depth. It should be noted that nowhere in the Baltic Sea fulfils these criteria (Figure 2).

8. The release of sediments during the cleaning of ballast tanks should not take place within the Baltic Sea, or within 200 nautical miles of the coastline of the North-East Atlantic, or within the Mediterranean Sea.

Figure 1: Map of North-West Europe showing the 200 nautical miles and 50 nautical miles contours and the 200m depth contour.

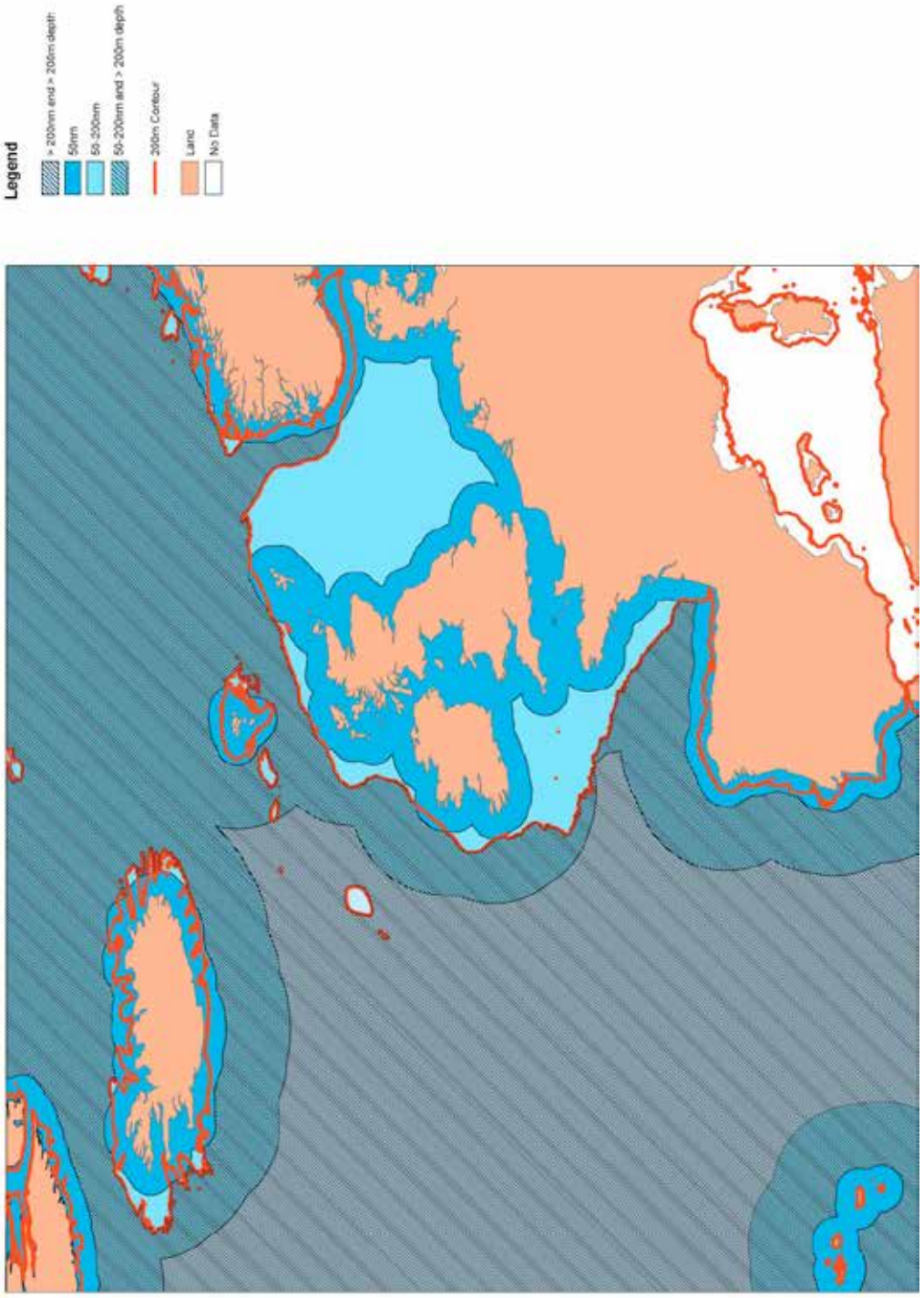
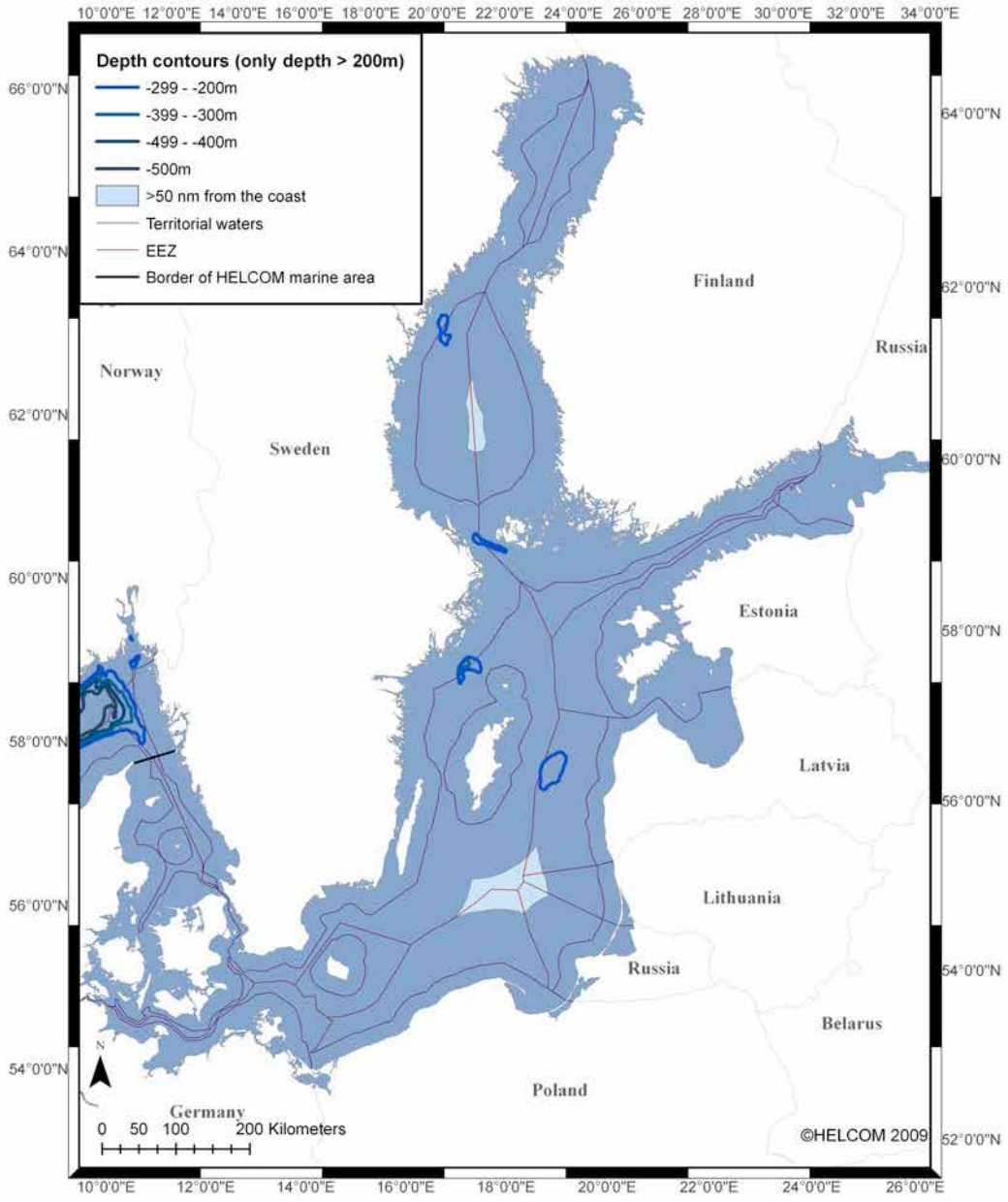


Figure 2: Map of the Baltic Sea showing areas of more than 50 nautical miles from the nearest land and areas of 200 meters depth.



4. THE ADRIATIC SEA: NATIONAL LAWS AND REGULATIONS ON SHIPS' BALLAST WATER

4.1 Albania

4.1. ALBANIA

2008 RATIFICATION LAW

(ORIGINAL TEXT)

Ligji nr. 9912, datë 5.5.2008 për aderimin e republikës së shqipërisë në konventën ndërkombëtare "për kontrollin dhe administrimin e ujërave të balasteve dhe sedimenteve të anijeve, 2004"

Në mbështetje të neneve 78, 83 pika 1 dhe 121 të Kushtetutës, me propozimin e Këshillit të Ministrave,

Kuvendi i republikës së shqipërisë vendosi:

Neni 1
Republika e Shqipërisë aderon në konventën ndërkombëtare "Për kontrollin dhe administrimin e ujërave të balasteve dhe sedimenteve të anijeve, 2004" (Konventa BWM, 2004)

Neni 2
Ky ligj hyn në fuqi 15 ditë pas botimit në Fletoren Zyrtare.

Shpallur me dekretin nr.5730, datë 19.5.2008 të Presidentit të Republikës së Shqipërisë, Bamir Topi

(UNOFFICIAL TRANSLATION)

Law no. 9912 of 5.5.2008 for the Accession of the Republic of Albania to the "International Convention for the control and management of ships' ballast water and sediments, 2004"

Pursuant to articles 78, 83 paragraph 1, and 121 of the Constitution, with the proposal of the Council of Ministers

The Parliament of the Republic of Albania decided:

Article 1
The Republic of Albania adheres to the "International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004" (BWM Convention, 2004)

Article 2
This law enters into force 15 days after publication in the Official Journal

Promulgated by Decree no. 5730, dated 19.5.2008 of the President of the Republic of Albania, Bamir Topi

4.2 Croatia

4.2. CROATIA

2010 RATIFICATION LAW

(ORIGINAL TEXT)

HRVATSKI SABOR

Na temelju članka 88. Ustava Republike Hrvatske, donosim Odluku o proglašenju zakona o potvrđivanju međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima iz 2004. godine

Proglašavam Zakon o potvrđivanju Međunarodne konvencije o nadzoru upravljanja brodskim balastnim vodama i talozima iz 2004. godine, koji je Hrvatski sabor donio na sjednici 30. travnja 2010. Godine.

Klasa: 011-01/10-01/40
Urbroj: 71-05-03/1-10-2
Zagreb, 5. svibnja 2010.

Predsjednik Republike Hrvatske
prof. dr. sc. Ivo Josipović, v. r.

ZAKON O POTVRĐIVANJU MEĐUNARODNE KONVENCIJE O NADZORU I UPRAVLJANJU BRODSKIM BALASTNIM VODAMA I TALOZIMA IZ 2004. GODINE

Članak 1.
Potvrđuje se Međunarodna konvencija o nadzoru i upravljanju brodskim balastnim vodama i talozima iz 2004. godine, sastavljena u Londonu 13. veljače 2004., u izvorniku na arapskom, kineskom, engleskom, francuskom, ruskom i španjolskom jeziku.

Članak 2.
Tekst Konvencije iz članka 1. ovoga Zakona, u izvorniku na engleskom jeziku i u prijevodu na hrvatski jezik, glasi:

(*omissis*)

(UNOFFICIAL TRANSLATION)

THE CROATIAN PARLIAMENT

Pursuant to Article 88 of the Croatian Constitution, I hereby adopt the Decision on promulgation of the law on ratification of the 2004 International Convention on the Control and Management of Ships' ballast water and sediments

Promulgation of the law on ratification of the 2004 International Convention on the Control of Management of Ships' Ballast Water and Sediments by the Croatian Parliament at its session on 30 April 2010.

Class: 011-01/10-01/40
No: 71-05-03/1-10-2
Zagreb, May 5, 2010.

The President of the Croatian Republic
prof. dr. sc. Ivo Josipović, v. r.

LAW ON RATIFICATION OF THE INTERNATIONAL CONVENTION ON THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

Article 1
Confirms the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, done at London on 13 February 2004, in the original Arabic, Chinese, English, French, Russian and Spanish languages.

Article 2
The text of the Convention under Article 1 of this Act, in the original in English and translated into Croatian, reads as follows:

(*omissis*)

2004 MARITIME CODE, AS AMENDED (EXTRACTS)

(ORIGINAL TEXT)

HRVATSKI SABOR
Na temelju članka 88. Ustava Republike Hrvatske, donosim

ODLUKU O PROGLAŠENJU POMORSKOG ZAKONIKA
Proglašavam Pomorski zakonik, koji je donio Hrvatski sabor na sjednici 8. prosinca 2004. godine.

Broj: 01-081-04-3801/2
Zagreb, 14. prosinca 2004.
Predsjednik Republike Hrvatske Stjepan Mesić, v. r.

POMORSKI ZAKONIK

Dio Prvi - OPĆE ODREDBE
(*omissis*)

Dio Treći - SIGURNOST PLOVIDBE

Glava I. - ZAJEDNIČKE ODREDBE
(*omissis*)

Glava I.a
ZAŠTITA OD ONEČIŠĆENJA S POMORSKIH OBJEKATA
(*omissis*)

Članak 49.b

(1) Zabranjuje se u more i na morsku obalu ispuštati i odbacivati kruti i tekući otpad, zauljene vode, fekalije i ostatke tereta s pomorskog objekta, kao i sve druge tvari koje onečišćuju more, zrak ili obalu.

(2) Pomorski objekti su dužni poduzimati mjere radi sprečavanja štetnog prijenosa morskih vodenih organizama i patogena putem brodskih balastnih voda i taloga, te putem obrastanja.

(3) Detaljan propis o zaštiti od onečišćenja morskog okoliša s pomorskih objekata, te provođenju istraga onečišćenja mora donosi ministar.

(UNOFFICIAL TRANSLATION)

CROATIAN PARLIAMENT
Based on Article 88 of the Constitution of the Republic of Croatia, I hereby pass the

DECISION ON PROMULGATING THE MARITIME CODE
I hereby promulgate the Maritime Code, adopted by the Croatian Parliament at its session on 8 December 2004.

Number: 01-081-04-3801/2
Zagreb, on 14 December 2004
President of the Republic of Croatia, Stjepan Mesić, v. r.
MARITIME CODE

Part One - GENERAL PROVISIONS
(*omissis*)

Part Three - SAFETY OF NAVIGATION

Title I - COMMON PROVISIONS
(*omissis*)

Title I a - PROTECTION FROM POLLUTION FROM VESSELS AND MARITIME STRUCTURES
(*omissis*)

Article 49b

(1) It shall be forbidden to discharge and discard into the sea and on the coast solid and the liquid waste, oily waters, faeces and cargo residues from vessels and maritime structures, as well as all other substances which pollute sea, air or coast.

(2) Vessels and maritime structures shall apply measures to prevent harmful transmission of marine aquatic organisms and pathogens by way of ships' ballast waters and sediments, as well as by fouling.

(3) Detailed regulation on the protection from pollution of marine environment from vessels and floating structures, and on conducting investigations about sea pollution shall be issued by the minister.

(4) Strategiju upravljanja balastnim vodama i talozima donosi Vlada Republike Hrvatske.

(5) Ministar će u suglasnosti s ministrom nadležnim za zaštitu okoliša donijeti propis o upravljanju i nadzoru balastnih voda.

Glava V.- BROD
1. Utvrnivanje sposobnosti broda za plovidbu

Članak 76.

(1) Brod je sposoban za plovidbu u odrenenim kategorijama plovidbe i za odrenenu namjenu ako udovoljava odredbama ovoga Zakonika, propisa donesenih na temelju ovoga Zakonika i Tehničkim pravilima u svezi sa: (*omissis*)

6) zaštitom pomorskog okoliša od bioinvazivnih vrsta u balastnim vodama, (*omissis*)

Glava IX. - INSPEKCIJSKI NADZOR
(*omissis*)

Članak 167.

(1) Inspekcijski nadzor nad stranim brodovima u lukama Republike Hrvatske provodi se sukladno postupcima utvrđenim Pariškim memorandumom o suglasnosti o nadzoru države luke.

(2) U obavljanju inspekcijskog nadzora nad stranim brodom prema odredbi članka 166. stavka 1. točke 1) ovoga Zakonika provjerava se ima li brod važeće isprave u skladu s odredbama: (*omissis*)

12) Međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima, 2004. (*omissis*)

(4) The strategy for ballast waters and sediments management shall be adopted by the Government of the Republic of Croatia.

(5) The minister shall, in agreement with the minister competent for environmental protection, issue a regulation on ballast water management and inspection.
(*omissis*)

Title V - SHIP
1 Establishing the seaworthiness of a ship

Article 76

(1) The ship is seaworthy within certain categories of navigation and for a specific purpose, if this is in accordance with provisions of this Code, regulations adopted on the basis thereof and the Technical Rules regarding: (*omissis*)

6) the protection of the maritime environment from bio-invasive species in ballast waters, (*omissis*)

Title IX
INSPECTION
(*omissis*)

Article 167

(1) Inspection of foreign ships in the ports of the Republic of Croatia shall be conducted in compliance with the procedures established by the Paris Memorandum of Understanding on port State control.

(2) While performing inspection of a foreign ship, in accordance with provisions of Article 166, paragraph 1, point 1) of this Code, it shall be established whether the ship is in possession of valid documents with regard to provisions of: (*omissis*)

12) the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (*omissis*)

2012 ORDINANCE ON BALLAST WATER MANAGEMENT AND CONTROL, AS AMENDED

(ORIGINAL TEXT)

MINISTARSTVO POMORSTVA, PROMETA I INFRASTRUKTURE

Na temelju članka 1023. stavka 1. alineje 4. Pomorskog zakonika (»Narodne novine« br. 181/04, 76/07, 146/08, 61/11) ministar pomorstva, prometa i infrastrukture, uz suglasnost ministra zaštite okoliša i prirode donosi

PRAVILNIK O UPRAVLJANJU I NADZORU BALASTNIH VODA

OPĆE ODREDBE

Članak 1.

U cilju unapređenja zaštite okoliša ovim se Pravilnikom utvrđuju načela i postupci upravljanja i nadzora brodskih balastnih voda i taloga na brodovima, dok plove u unutarnjim morskim vodama, teritorijalnom moru i zaštićenom ekološko-ribolovnom pojasu Republike Hrvatske, kao i na brodovima hrvatske državne pripadnosti neovisno o tome gdje plove.

Članak 2.

Pojedini izrazi upotrijebljeni u ovom Pravilniku imaju sljedeće značenje:

1. «aktivna tvar» označava tvar ili organizam, uključujući viruse ili gljivice, koji općenito ili specifično djeluju na štetne vodene organizme i patogene, ili protiv njih;

2. «balastna voda» je voda s tvarima u njoj, ukrcana radi postizanja zadovoljavajuće razine stabiliteta, uzdužnog i poprečnog nagiba, gaza i naprezanja broda;

3. «balastni kapacitet broda» jest ukupni volumetrički kapacitet svih tankova, prostora ili odjeljaka na brodu, a koji se koristi za prijevoz, ukrcaj ili iskrcaj balastnih voda, uključujući i višenamjenske tankove, prostore ili odjeljke izgrađ ene tako da mogu prevoziti balastne vode;

4. «balastni sustav» jest sustav tankova, prostora i odjeljaka na brodu koji se koriste za prijevoz, ukrcaj ili iskrcaj balastnih voda, uključujući i višenamjenske tankove, prostore ili odjeljke izgrađ ene tako da mogu prevoziti balastne vode zajedno s balastnim cjevovodom i pripadajućim crpkama;

(UNOFFICIAL TRANSLATION)

THE MINISTRY OF MARITIME AFFAIRS, TRANSPORT AND INFRASTRUCTURE

Pursuant to Article 1023, paragraph 1, fourth indent of the Maritime Code (Official Gazette 181/04, 76/07, 146/08, 61/11), the Minister of Maritime Affairs, Transport and Infrastructure, upon approval of the Minister of Environmental and Nature Protection, hereby issues the

ORDINANCE ON BALLAST WATER MANAGEMENT AND CONTROL

GENERAL PROVISIONS

Article 1

With the purpose to improve environmental protection, this Ordinance regulates the principles and procedures for management and control of ballast water and sediments onboard ships, while navigating in internal waters, territorial sea and protected ecological and fishing zone of the Republic of Croatia, as well as onboard ships of Croatian nationality, regardless of where they navigate.

Article 2

The terms used in this Ordinance have the following meaning:

1. «active substance» is a substance or an organism, including viruses or fungi, which generally or specifically affect harmful aquatic organisms and pathogens;

2. «ballast water» is the water with its suspended matter taken on board in order to achieve acceptable level of stability, trim, list, draught, and stresses of the ship;

3. «ballast capacity of a ship» is the total volumetric capacity of all the tanks, spaces or compartments on board a ship, used for carrying, loading or discharging ballast water, including multipurpose tanks, spaces or compartments built so as to allow carriage of ballast water;

4. «ballast system» is the system of tanks, spaces and compartments aboard the ship used for carrying, loading or discharging ballast water, including multipurpose tanks, spaces or compartments built so as to to allow carriage of ballast water together with ballast piping and

5. «balastni tank» jest bilo koji tank ili skladište na brodu, a koji se koristi za prijevoz balastnih voda, bez obzira da li su tank i skladište konstruirani za tu svrhu;

6. «brod» je bilo koji plovni objekt, te drugi pomorski objekti uključujući podmornice, plutajuće objekte, platforme, plutajuće skladišne jedinice (FSO) te plutajuće jedinice za proizvodnju, skladištenje i prekrcaj (FPSO);

7. «bruto tonaža» je bruto tonaža izračunata u skladu s odredbama o baždarenju navedenima u Dodatku I Međunarodne konvencije o baždarenju brodova iz 1969. godine, kako je izmijenjena i dopunjena;

8. «datum godišnjice» je dan i mjesec svake godine koji odgovara datumu isteka valjanosti Svjedodžbe.;

9. «inspektor» je inspektor sigurnosti plovidbe ili drugi ovlašteni djelatnik Ministarstva ili lučkih kapetanija, sukladno odredbama Pomorskog zakonika;

10. «izgrađen» u odnosu na brod je stupanj izgradnje gdje:

– je kobilica postavljena; ili

– je gradnja povezana s određenim brodom započela; ili

– je započelo sklapanje broda ne manje od 50 tona ili 1 posto procijenjene mase svih strukturnih elemenata, što je manje; ili

– je izvršena veća preinaka;

11. «Knjiga o balastnim vodama» je dokument u koji se upisuju sve radnje na brodu vezano za upravljanje balastnim vodama

12. «Konvencija» je Međunarodna konvencija o nadzoru i upravljanju brodskim balastnim vodama i talozima, iz 2004. godine (Zakon o potvrđivanju Konvencije objavljen je u «Narodnim novinama Međunarodni ugovori» br. 3/2010);

13. «Ministarstvo» je ministarstvo nadležno za pomorstvo;

14. «Ministar» je ministar u ministarstvu nadležnom za pomorstvo;

15. «od najbližeg kopna» je udaljenost od polaznih crta od kojih se mjeri širina teritorijalnog mora sukladno međunarodnom pravu;

associated pumps;

5. «ballast tank» is any tank or hold aboard the ship used for transport of ballast water, regardless of whether the tank or hold has been constructed for such a purpose;

6. «ship» is any waterborne craft or other maritime craft, including submersibles, floating craft, platforms, Floating Storage Units (FSO) and Floating Production Storage and Offloading Units (FPSO);

7. «gross tonnage» is gross tonnage calculated in accordance with measurement provisions specified in Appendix I to the 1969 International Convention on Tonnage Measurement of Ships, as amended;

8. «anniversary date» is the day and the month of each year corresponding to the date of expiry of the Certificate;

9. «inspector» is the maritime safety inspector or other authorized employee of the Ministry or the harbour master's office, in accordance with the provisions of the Maritime Code;

10. «constructed», in respect of a ship, means a stage of construction where:

- the keel is laid; or

- construction identifiable with a specific ship begins; or

- assembly of the ship has commenced comprising at least 50 tonnes or 1 percent of the estimated mass of all structural material, whichever is less; or

- the ship undergoes a major conversion;

11. «Ballast Water Record Book» is a document into which all activities aboard related to ballast water management are to be entered

12. «Convention» is the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments (Act on the Ratification of the Convention was published in the Official Gazette, International Agreements, No. 3/2010);

13. «Ministry» is the Ministry responsible for maritime affairs;

14. «Minister» is the Minister of the Ministry responsible for maritime affairs;

15. «from the nearest land» means from the baseline from which the territorial sea of the territory in question is established in accordance with international law;

16. «Organizacija» je Međunarodna pomorska organizacija (IMO);

17. «Plan Upravljanja balastnim vodama» je plan koji sadrži postupke za brod i posadu vezano za nadzor i upravljanje brodskim balastnim vodama i talozima.

18. «Smjernice» su Smjernice koje usvoji Organizacija u svezi primjene Konvencije;

19. «Svjedodžba» jest Međunarodna svjedodžba o upravljanju balastnim vodama;

20. «Štetni vodeni organizmi i patogeni» su vodeni organizmi ili patogeni koji, ako se unesu u mora, uključujući i ušća, ili u slatkovodne tokove, mogu ugroziti okoliš, ljudsko zdravlje, imovinu ili sredstva, te unošenjem mogu narušiti biološku raznolikost ili ometati zakonito korištenje takvih područja;

21. «Talozi» su tvari nataložene u balastnoj vodi unutar broda;

22. «Upravljanje balastnim vodama» je mehanički, fizikalni, kemijski i biološki postupak ili kombinacija tih postupaka, kojim se uklanja, čini bezopasnim ili izbjegava uzimanje ili ispuštanje štetnih vodenih organizama i patogena u balastnim vodama i talozima;

23. «Veća preinaka» je preinaka broda:

– koja mijenja balastni kapacitet broda za 15 posto ili više; ili

– koja mijenja tip broda; ili

– koja prema mišljenju Ministarstva produljuje njegov životni vijek 10 godina ili više; ili

– koja preinačuje njegov balastni sustav, osim zamjene opreme istom. Preinaka broda radi udovoljavanja zahtjevima iz članka 10. ovog Pravilnika ne smatra se većom preinakom za potrebe ovog Pravilnika;

24. «ZERP Republike Hrvatske» je Zaštićeni ekološko-ribolovni pojas Republike Hrvatske kako je ustanovljen Odlukom Hrvatskog sabora o proširenju jurisdikcije Republike Hrvatske na Jadranskom moru («Narodne novine», br. 157/03, 77/04, 138/06 i 31/08).

16. «Organisation» is the International Maritime Organisation (IMO);

17. «Ballast Water Management Plan» is the plan containing procedures for the ship and the crew, in relation to control and management of the ships' ballast water and sediments.

18. «Guidelines» are the Guidelines adopted by the Organisation regarding application of the Convention;

19. «Certificate» is the International Ballast Water Management Certificate;

20. «Harmful aquatic organisms and pathogens» are aquatic organisms or pathogens which, if introduced into the sea, including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, as well as impair biodiversity or interfere with legitimate uses of such areas;

21. «Sediment» is matter settled out of ballast water within a ship;

22. «Ballast water management» are mechanical, physical, chemical, and biological processes, either singularly or in combination, to remove, render harmless, or avoid the uptake or discharge of harmful aquatic organisms and pathogens within ballast water and sediments;

23. «Major conversion» is a conversion of a ship:

- which changes its ballast water carrying capacity by 15 percent or greater; or

- which changes the ship type; or

- which, in the opinion of the Ministry, is projected to prolong its life by ten years or more; or

- which results in modifications to its ballast water system other than component replacement-in-kind. Conversion of a ship to meet the provisions of Article 10 of this Ordinance shall not be deemed to constitute a major conversion for the purposes of this Ordinance;

24. «EFPZ of the Republic of Croatia» is the Ecological and Fisheries Protection Zone of the Republic of Croatia, as determined by the Decision of the Croatian Parliament on expansion of jurisdiction of the Republic of Croatia in the Adriatic Sea (Official Gazette, No. 157/03, 77/04, 138/06 and 31/08).

Članak 3.

(1) Ovaj Pravilnik se primjenjuje na brodove hrvatske državne pripadnosti neovisno o kategoriji plovidbe, i brodove neovisno o njihovoj državnoj pripadnosti, koji uplovljavaju u luke u Republici Hrvatskoj ili plove unutarnjim morskim vodama, teritorijalnim morem ili zaštićenim ekološko-ribolovnim pojasom Republike Hrvatske.

(2) Iznimno od odredbe stavka 1. ovaj Pravilnik se ne primjenjuje na:

– brodove koji isključivo plove ili borave u unutarnjim morskim vodama, teritorijalnom moru li zaštićenom ekološko-ribolovnom pojasu Republike Hrvatske,

– brodove hrvatske državne pripadnosti koji isključivo plove ili borave u unutarnjim morskim vodama ili teritorijalnom moru druge države ako ih je druga država izuzela od primjene odredaba Konvencije ili nacionalnih propisa o upravljanju balastnim vodama,

– brodove koji nisu projektirani i izgrađeni za prijevoz balastnih voda ili imaju stalne balastne vode u zapečaćenim spremnicima na brodovima, koje ne podliježu ispuštanju,

– ratne brodove, pomoćne ratne brodove ili javne brodove. Ipak, nadležna tijela koja upravljaju ovim brodovima dužna su, voditi računa da brodovi primjenjuju odredbe ovog Pravilnika u najvećoj mogućoj mjeri koliko je to razumno i praktično.

(3) Iznimno od odredbe stavka 2. podstavka a), Ministarstvo može proširiti primjenu Pravilnika na sve ili pojedine brodove koji plove ili borave isključivo u unutarnjim morskim vodama ili teritorijalnom moru Republike Hrvatske, ako se utvrdi da bi iskrcaj balastnih voda s broda ili brodova ugrozio ili štetio okolišu, ljudskom zdravlju ili imovini u Republici Hrvatskoj ili susjednim državama.

(4) Ne dovodeći u pitanje primjenu iznimke iz stavka 2., na brodice i jahte koje se koriste isključivo za osobne potrebe ili športska natjecanja, osim brodica i jahti koje plove isključivo u unutarnjim morskim vodama i teritorijalnom moru Republike Hrvatske primjenjuju se jednakovrijedni zahtjevi koji se, sukladno Smjernicama Organizacije – Smjernice za jednakovrijedne zahtjeve za upravljanje balastnim vodama – G3 (Rezolucija MEPC.123(53) utvrđuju posebnim propisom.

Article 3

(1) This Ordinance applies to ships of Croatian nationality, regardless of their category of navigation, as well as ships, regardless of their nationality, which call to ports in the Republic of Croatia or navigate in Croatian internal waters, territorial sea or the Ecological and Fisheries Protection Zone of the Republic of Croatia.

(2) By way of derogation from the provision of paragraph 1, this Ordinance does not apply to:

- ships navigating or staying only in internal waters, territorial sea or Ecological and Fisheries Protection Zone of the Republic of Croatia,

- ships of Croatian nationality navigating or staying only in internal waters or the territorial sea of another country, if that country has excepted them from the application of provisions of the Convention or national laws on ballast water management,

- ships which are not designed and built for transport of ballast water, or which carry onboard permanent ballast water in sealed containers, which is not subject to discharge,

- warships, auxiliary warships or public vessels. However, competent authorities operating these ships shall ensure that the ships apply the provisions of this Ordinance, so far as is reasonable and practicable.

(3) By derogation from paragraph 2, subparagraph a), the Ministry can extend the application of the Ordinance to all or particular ships navigating or staying only in internal waters or territorial sea of the Republic of Croatia, if established that discharge of ballast water from the ship or ships would create hazard or damage to the environment, human health or property in the Republic of Croatia or neighbouring countries.

(4) Without prejudice to application of the derogation referred to in paragraph 2, on boats and yachts used only for personal needs or sports competitions, except boats and yachts navigating only in internal waters and territorial sea of the Republic of Croatia, equivalent requirements shall apply, which, according to the Guidelines of the Organisation – Guidelines for Ballast Water Management Equivalent Compliance (G3) (Resolution MEPC.123(53)) are established by special regulation.

PRIJAVA I EVIDENTIRANJE BALASTNIH VODA

Članak 4.

(1) Svi brodovi na koje se primjenjuje ovaj Pravilnik i koji dolaze iz inozemstva moraju nadležnoj lučkoj kapetaniji dostaviti prijavu balastnih voda na obrascu iz Priloga I. ovog Pravilnika.

(2) Prijavu iz stavka 1. ovog članka zapovjednik je dužan dostaviti najkasnije 48 sati prije uplovljavanja broda u luku, odnosno neposredno nakon isplovljenja iz posljednje inozemne luke ako je vrijeme plovidbe do uplovljavanja u hrvatsku luku kraće od 48 sati.

PREVENTIVNE MJERE

Članak 5.

(1) Zapovjednik broda dužan je, u mjeri u kojoj to omogućavaju zahtjevi sigurnosti plovidbe i zaštite morskog okoliša, izbjeći ili ograničiti ukrcaj balastnih voda u područjima:

– za koja je poznato da postoje štetni mikroorganizmi,

– u kojima postoje tvornički ispusti,

– gdje se vrše podmorska jaružanja,

– gdje su izrazito visoke razlike morskih mijena,

– u kojima postoji visoka zamućenost vode zbog rada brodskih porivnih uređaja (plitke luke, estuariji, sidrišta),

– mriještenja riba, i

– sudaranja morskih struja.

(2) Lučke uprave ili tijela koja upravljaju lukom dužni su upozoriti zapovjednika broda o okolnostima iz stavka 1. ovog članka.

Članak 6.

(1) Ministarstvo uz mišljenje ministarstva nadležnog za poslove zaštite okoliša, može izdati upozorenja vezana uz ukrcaj ili iskrcaj balastnih voda u pojedinim područjima unutarnjih morskih voda, teritorijalnog moru i ZERPU i/ili propisati pripadajuće privremene mjere zabrane ukrcaja ili iskrcaja balastnih voda u tom području, te navesti bilo koje alternativno područje prikladno za ukrcaj balastnih voda.

(2) Upozorenja vezana uz ukrcaj ili iskrcaj balastnih voda iz stavka 1. izdat će se samo za područja za koja je poznato da sadržavaju izvorišta epidemija, zaraza ili populacija štetnih vodenih organizama i patogena (npr. cvjetanja štetnih algi).

REPORTING AND RECORDING THE BALLAST WATER

Article 4

(1) All ships arriving from abroad, to which this Ordinance applies, must report the ballast water to the competent harbour master's office on the form in Annex I to this Ordinance.

(2) Notification referred to in paragraph 1 of this Article must be delivered by master of the ship within 48 hours prior to calling of the ship at port, or immediately upon departure from the last foreign port if time of navigation prior to calling at Croatian port is less than 48 hours.

PREVENTIVE MEASURES

Article 5

(1) Master of the ship shall, to the extent that the requirements concerning navigational safety and protection of the marine environment allow, avoid or restrain loading of ballast water in the areas:

- where the existence of harmful microorganisms is known,

- where industrial discharges are present,

- where underwater dredging takes place,

- with exceptionally high tide variations,

- with high water turbidity resulting from the running of ship propulsion machinery (shallow ports, estuaries, berths),

- spawning of the fish, and

- of encounter of marine currents.

(2) Port authorities or port managing bodies shall warn the master of the ship about the circumstances referred to in paragraph 1 of this Article.

Article 6

(1) The Ministry, with the opinion of the Ministry competent for environmental protection, can issue a warning concerning loading or unloading of ballast water in particular areas of internal waters, territorial sea and EFPZ of the Republic of Croatia and/or prescribe relevant interim measures prohibiting loading or unloading of ballast water in this area, as well as indicate any alternative area appropriate for loading of ballast water.

(2) Warnings concerning loading or unloading of ballast water referred to in paragraph 1 shall be issued only for the areas which are known to contain sources of epidemics, infections or

(3) Ministarstvo će o područjima iz stavka 1. izvijestiti Organizaciju, te će na uobičajeni način obavještavati pomorce.

OPĆA OBVEZA
Članak 7.

Ako ovim Pravilnikom nije izričito drukčije propisano, zabranjeno je ispuštati balastne vode u unutarnje morske vode, teritorijalno more ili ZERP Republike Hrvatske ako prethodno nisu provedene mjere upravljanja balastnim vodama sukladno odredbama ovog Pravilnika.

Članak 8.

Do trenutka stupanja na snagu Međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima iz 2004. godine, u odnosu na brodove koji plove između područja određenih u Smjernicama o dobrovoljnoj privremenoj primjeni standarda D1, iz Priloga II. ovog Pravilnika, na dobrovoljnoj bazi se primjenjuju Smjernice.

IZUZEĆA
Članak 9.

Iznimno od odredbe članka 7. ovog Pravilnika obveza provedbe mjera upravljanja balastnim vodama prije ispuštanja ne odnosi se na:

– ukrcaj ili iskrcaj balastnih voda nužnih za očuvanje sigurnosti broda u iznenadnim situacijama ili radi sigurnosti ljudskih života na moru; ili

– neočekivano istjecanje ili unos balastnih voda zbog oštećenja broda ili opreme:

a) pod uvjetom da su poduzete sve razumne preventivne mjere prije i za vrijeme događaja, a radi sprečavanja ili umanjenja iskrcaja balastnih voda; i

b) da vlasnik, kompanija ili ovlašteni časnik nisu namjerno ili krajnjom nepažnjom prouzročili štetu; ili

– ukrcaj ili iskrcaj balastnih voda radi izbjegavanja ili umanjenja onečišćenja okoliša s broda; ili

– ukrcaj i iskrcaj istih balastnih voda na otvorenom moru; ili

– iskrcaj balastnih voda s broda na istoj lokaciji na kojoj je cijela količina balastnih voda ukrcana, pod uvjetom da te balastne vode nisu pomiješane sa neobrađenim balastnim vodama s drugog područja.

populations of harmful aquatic organisms and pathogens (e.g. harmful algal bloom).

(3) The Ministry shall notify the Organisation about the areas referred to in paragraph 1, and it shall also inform the seafarers in the usual way.

GENERAL OBLIGATION
Article 7

Unless otherwise prescribed by this Ordinance, it shall be prohibited to discharge ballast water in internal waters, territorial sea or EFPZ of the Republic of Croatia, if measures of ballast water management have not been performed according to provisions of this Ordinance.

Article 8

Until the moment of entry into force of the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, with respect to ships navigating between the areas mentioned in the Guidance on the Voluntary Interim Application of the D1 Standard, given in Annex II of this Ordinance, the Guidance shall apply on voluntary basis.

EXCEPTIONS
Article 9

By way of exception from the provision contained in Article 7 of this Ordinance, the obligation of implementation of measures of ballast water management before discharge shall not apply to:

- uptake or discharge of ballast water necessary for the purpose of ensuring the safety of a ship in emergency situations or safety of life at sea; or

- accidental discharge or ingress of ballast water resulting from damage to a ship or its equipment:

a) provided that all reasonable precautions have been taken before and during the event, for the purpose of preventing or minimizing the discharge of ballast water; and

b) unless the owner, company or officer in charge wilfully or recklessly caused damage; or

- the uptake and discharge of ballast water when being used for the purpose of avoiding or minimizing pollution incidents from the ship;

or

- uptake and discharge of the same ballast water on the high seas; or

- the discharge of ballast water from a ship at

OSLOBAĐANJE
Članak 10.

(1) Ministarstvo može osloboditi od primjene odredaba članaka 11., 12., 13. ili 14. ovog Pravilnika brod ili brodove koji ukrcavaju ili iskrcavaju balastne vode u Republici Hrvatskoj a koji plove između točno određenih luka ili područja.

(2) Oslobađanje iz stavka 1. može se dati samo na temelju provedene procjene rizika sukladno Smjernicama Organizacije – Smjernica za procjenu rizika – G7 (IMO rezolucija MEPC.162(56)), kako su izmijenjene i dopunjene, kako bi se osiguralo da isto ne ugrožava okoliš, ljudsko zdravlje, imovinu ili sredstva u Republici Hrvatskoj, susjednim ili drugim državama.

(3) Oslobađanje iz stavka 1. može se dati samo u slučaju da brod ne miješa balastne vode i talog s balastnim vodama i talogom ukrcanim u drugom području ili luci.

(4) Oslobađanje iz stavka 1. može se dati na rok ne dulji od pet godina, i primjenjuju se nakon što Ministarstvo o oslobađanju obavijesti Organizaciju, te ta informacija bude dostavljena državama strankama Konvencije.

(5) Oslobađanja iz ovog članka mogu se dati i temeljem međunarodnog ugovora ili akta.

(6) Sva izuzeća odobrena temeljem ovoga članka bilježe se u Knjigu o balastnim vodama.

STANDARDI UPRAVLJANJA
Članak 11.

(1) Brodovi sagrađeni prije 2009. godine, s balastnim kapacitetom broda od 1500 do uključivo 5000 kubičnih metara, provode upravljanje balastnim vodama koje zadovoljava najmanje standard propisan člankom 12. ili člankom 14. ovoga Pravilnika, do 2014. godine nakon čega moraju zadovoljavati najmanje standard propisan člankom 14.

(2) Brodovi sagrađeni prije 2009. godine, s balastnim kapacitetom broda manjim od 1500 ili većim od 5000 kubičnih metara, provode upravljanje balastnim vodama koje zadovoljava najmanje standard propisan člankom 12. ili člankom

the same location where the whole of that ballast water originated, provided that no mixing with unmanaged ballast water from other areas has occurred.

EXEMPTIONS
Article 10

(1) The Ministry can exempt from application of provisions of Articles 11, 12, 13 or 14 of this Ordinance a ship or ships loading or discharging ballast water in the Republic of Croatia and navigating between specific ports or areas.

(2) The exemption referred to in paragraph 1 can be granted only based on a risk assessment preformed according to the Guidelines of the Organisation – Guidelines on risk assessment (G7) (IMO Resolution MEPC.162(56)), as amended, in order to ensure that it does not threaten the environment, human health, property or resources in the Republic of Croatia, neighbouring or other countries.

(3) The exemption referred to in paragraph 1 can be granted only in case that the ship does not mix ballast water and sediments with ballast water and sediments from another area or port.

(4) The exemption referred to in paragraph 1 can be granted for the period not longer than five years, and applies after the Ministry informs the Organisation about the exemption, and this information is submitted to the parties to the Convention.

(5) Exemption from this Article can be granted based on international agreement or act.

(6) Any exemption granted based on this Article shall be recorded in the Ballast Water Record Book.

MANAGEMENT STANDARDS
Article 11

(1) Ships constructed before 2009, with a ballast water capacity of between 1,500 and 5,000 cubic metres, inclusive, shall conduct ballast water management that at least meets the standard prescribed in Article 12 or Article 14 of this Ordinance, until 2014, after which time it shall at least meet the standard described in Article 14.

(2) Ships constructed before 2009, with a ballast water capacity of less than 1,500 or greater than 5,000 cubic metres, shall conduct ballast water management that at least meets the standard provided for in Article 12 or Article 14 of this

14. ovoga Pravilnika, do 2016. godine nakon čega moraju zadovoljavati najmanje standard propisan člankom 14.

(3) Brodovi na koji se primjenjuje stavak 1. ili 2. moraju udovoljavati uvjetima iz tog stavka najkasnije do prvog među pregleda ili obnovnog pregleda, ovisno koji je prije, nakon datuma godišnjice isporuke broda u godini usklađenosti sa standardom primjenjivim na taj brod.

(4) Brodovi izgrađeni 2009. godine, s balastnim kapacitetom manjim od 5000 kubičnih metara, provode upravljanje balastnim vodama koje zadovoljava najmanje standard propisan u članku 14., najkasnije do drugog godišnjeg pregleda, ali ne kasnije od 31. prosinca 2011. godine.

(5) Brodovi izgrađeni nakon 2009. godine, s balastnim kapacitetom manjim od 5000 kubičnih metara, provode upravljanje balastnim vodama koje zadovoljava najmanje standard propisan člankom 14. ovog Pravilnika.

(6) Brodovi izgrađeni 2009. godine ili kasnije, ali prije 2012. godine, s balastnim kapacitetom od 5000 kubičnih metara ili više, provode upravljanje balastnim vodama u skladu sa stavkom 2. ovog članka.

(7) Brodovi izgrađeni 2012. godine ili kasnije, s balastnim kapacitetom od 5000 kubičnih metara ili više, provode upravljanje balastnim vodama koje zadovoljava najmanje standard propisan člankom 14. ovog Pravilnika.

(8) Zahtjevi iz ovoga članka ne primjenjuju se na brodove koji ispuštaju balastne vode u prihvatna postrojenja pri čijoj su konstrukciji uzete u obzir Smjernice G5 – Smjernice u pogledu prihvatnih uređaja za balastne vode (IMO rezolucija MEPC.153(55), kako je izmijenjena i dopunjena).

STANDARD ZA IZMJENU BALASTNIH VODA
Članak 12.

(1) Brodovi koji kao metodu upravljanja balastnim vodama koriste izmjenu balastnih voda moraju to činiti uz učinkovitost od najmanje 95 posto volumetričke izmjene balastnih voda.

(2) Brodovi koji kao metodu upravljanja balastnim vodama obavljaju izmjenu balastnih voda pumpanjem, smatra se da zadovoljavaju standard opisan u stavku 1., ako je pumpanjem izmijenjen trostruki volumen svakog balastnog tanka.

(3) U slučaju kada je pri izmjeni balastne vode pumpanjem izmijenjeno manje od trostrukog volumena svakog balastnog tanka, takva se izmjena

Ordinance, until 2016, after which time it shall at least meet the standard provided for in Article 14.

(3) Ship to which paragraphs 1 or 2 apply shall comply with those paragraphs not later than the first intermediate or renewal survey, whichever occurs first, after the anniversary date of delivery of the ship in the year of compliance with the standard applicable to the ship.

(4) Ships constructed in 2009, with a ballast water capacity of less than 5,000 cubic metres, shall conduct ballast water management that at least meets the standard prescribed in Article 14, before the second annual survey, but not later than 31 December 2011.

(5) Ships constructed after 2009, with a ballast water capacity of less than 5,000 cubic metres, shall conduct ballast water management that at least meets the standard prescribed in Article 14 of this Ordinance.

(6) Ships constructed in or after 2009, but before 2012, with a ballast water capacity of 5,000 cubic metres or more, shall conduct ballast water management in accordance with paragraph 2 of this Article.

(7) Ships constructed in or after 2012, with a ballast water capacity of 5,000 cubic metres or more, shall conduct ballast water management that at least meets the standard provided for in Article 14 of this Ordinance.

(8) The requirements of this regulation do not apply to ships that discharge ballast water to a reception facility designed taking into account the Guidelines for ballast water reception facilities (G5) (IMO Resolution MEPC.153(55), as amended).

BALLAST WATER EXCHANGE STANDARD
Article 12

(1) Ships which apply ballast water exchange as a measure of ballast water management, have to do so with the efficiency of at least 95% volumetric exchange of ballast water.

(2) Ship exchanging ballast water using the method of pumping shall be deemed to have complied with the standard referred to in paragraph 1, if pumping has been carried out to exchange at least three times the volume of each ballast tank.

(3) If during exchange of ballast water by pumping through method less than three times the volume of each ballast tank has been exchanged,

može prihvatiti pod uvjetom da brod može dokazati da je izmijenjeno najmanje 95 posto volumena balastnih tankova i ako je to predviđeno Planom upravljanja balastnim vodama.

(4) Brod koji kao metodu upravljanja balastnim vodama koristi izmjenu balastnih voda mora uvijek kada je to moguće obavljati izmjenu balastnih voda najmanje 200 nautičkih milja udaljen od najbližeg kopna i u morskim vodama čija dubina iznosi najmanje 200 metara

(5) U slučajevima kada brod ne može obaviti izmjenu balastnih voda u skladu sa stavkom 4. takva se izmjena balastnih voda mora obavljati na najmanje 50 nautičkih milja od najbližeg kopna i u morskim vodama čija je dubina najmanje 200 metara.

(6) Iznimno od odredbi stavaka 4. i 5., brodovi smiju izmjenjivati balastne vode i u područjima koja su za to određena sukladno odredbama Konvencije i Smjernica za određivanje područja izmjene balastnih voda G14 (IMO rezolucija MEPC.151(55), kako je izmijenjena i dopunjena).

Članak 13.

(1) Brodovi koji kao metodu upravljanja balastnim vodama provode izmjenu balastnih voda smiju ispustiti morsku vodu čiji je salinitet iznad 36‰.

(2) U slučaju kada balastna voda ima salinitet niži od 36‰ dodatnim analizama se ispituje sastav morske vode pri čemu broj fitoplanktonskih organizama (mikroplankton) ne smije prelaziti broj od 105 stanica L-1 i ne smije sadržavati dinoflagelatne ciste.

STANDARD ZA OBRADU BALASTNIH VODA

Članak 14.

(1) Brodovi koji upravljanje balastnim vodama provode putem obrade balastnih voda smiju ispustiti manje od 10 živih organizama većih ili jednakih 50 mikrometara, te manje od 10 živih organizmima po mililitru, čije su dimenzije manje od 50 mikrometara, odnosno čije su minimalne dimenzije veće od ili jednake 10 mikrometara, pri čemu ispuštanje indikatorskih mikroorganizama ne smije premašivati zadane koncentracije propisane u stavku 2.

(2) Indikatorski mikroorganizmi, kao standard za ljudsko zdravlje, uključuju:

– Toksični mikroorganizam *Vibrio cholerae* (O1 i

such an exchange can be accepted provided that the ship can prove at least 95 percent of volumetric exchange, and if that was envisaged by the Ballast Water Management Plan.

(4) Ship which uses ballast water exchange as ballast water management method has to conduct, whenever possible, ballast water exchange at the distance of at least 200 nm from the nearest land and at sea depth of at least 200 metres.

(5) When the ship has no possibility to exchange ballast water pursuant to paragraph 4 of this Article, ballast water exchange shall be performed at a distance of at least 50 nm from the nearest land and at sea depth of at least 200 metres.

(6) By means of exemption from provisions contained in paragraphs 4 and 5, ships can exchange ballast water in areas designated according to provisions of the Convention and the Guidelines on designation of areas for ballast water exchange (G14) (IMO Resolution MEPC.151(55), as amended).

Article 13

(1) Ships which perform ballast water exchange as a method of ballast water management can discharge sea-water with salinity above 36‰.

(2) In case when ballast water salinity is lower than 36‰, additional analyses shall be performed to examine the sea-water content, where the number of phytoplankton organisms (microplankton) cannot exceed the number of 105 L-1 cells and cannot contain dinoflagellate cysts.

BALLAST WATER TREATMENT STANDARD

Article 14

(1) Ships conducting ballast water management by way of ballast water treatment may discharge less than 10 live organisms, greater than or equal to 50 micrometers, and less than 10 live organisms per millilitre, with dimensions less than 50 micrometers, i.e. with minimum dimensions greater than or equal to 10 micrometers, where discharge of the indicator microorganisms shall not exceed the specified concentrations described in paragraph 2.

(2) Indicator microorganisms, as a human health standard, shall include:

- Toxicogenic *Vibrio cholerae* (O1 and O139)

O139) s manje od 1 kolonije (cfu) na 100 mililitara ili manje od 1 kolonije (cfu) po 1 gramu (mokra težina) uzorka zooplanktona;

– *Escherichia coli*, manje od 250 kolonija (cfu) na 100 mililitara;

– Crijevni enterokok, manje od 100 kolonija (cfu) na 100 mililitara.

ODOBRENJE SUSTAVA ZA OBRADU BALASTNIH VODA

Članak. 15.

(1) Sustave za obradu balastnih voda, osim sustava koji koriste aktivne tvari, odobrava priznata organizacija, sukladno Smjernicama G8 – Smjernice za odobrenje sustava upravljanja balastnim vodama (IMO rezolucija MEPC.174(58), kako je izmijenjena i dopunjena).

(2) Sustave za obradu balastnih voda koji koriste aktivne tvari odobrava Organizacija, sukladno Smjernicama G9 – Smjernice za odobravanje sustava upravljanja balastnim vodama koji uključuje korištenje aktivnih tvari (IMO rezolucija MEPC.169(57), kako je izmijenjena i dopunjena).

(3) Sustavi za obradu balastnih voda moraju biti sigurni za brod, njegovu opremu i posadu.

PROTOTIPNE TEHNOLOGIJE OBRADE BALASTNIH VODA

Članak 16.

(1) Pri uspostavi i provedbi bilo kojeg programa ispitivanja i procjene novih tehnologija obrade balastnih voda, Ministarstvo može dopustiti sudjelovanje brodova neophodnih za učinkovito ispitivanje takvih tehnologija.

(2) Za svaki brod koji sudjeluje u programu s ciljem ispitivanja i procjene novih tehnologija obrade balastnih voda, standard iz članka 14. neće se početi primjenjivati na taj brod dok ne prođe pet godina od datuma kada bi brod inače trebao biti usklađen s takvim standardom.

(3) Za svaki brod koji, nakon datuma kada se na njega počne primjenjivati standard iz članka 13., sudjeluje u programu s ciljem ispitivanja i procjene novih tehnologija obrade balastnih voda iz kojega se mogu razviti tehnologije obrade sa standardom većim od onoga iz članka 13., standard iz članka 14. neće se primjenjivati na taj brod tijekom razdoblja od pet godina od datuma ugradnje takve tehnologije.

with less than 1 colony forming unit (cfu) per 100 millilitres or less than 1 cfu per 1 gram (wet weight) zooplankton samples;

- *Escherichia coli*, less than 250 cfu per 100 millilitres;

- Intestinal Enterococci less than 100 cfu per 100 millilitres.

APPROVAL OF BALLAST WATER TREATMENT SYSTEMS

Article 15

(1) Systems for ballast water treatment, except the systems using active substances, shall be approved by a recognised organisation, according to Guidelines for approval of Ballast Water Management Systems (G8) (IMO Resolution MEPC.174(58), as amended).

(2) Systems for ballast water treatment which use active substances shall be approved by the Organisation, according to the Guidelines for Procedure for Approval of BWM systems that make use of Active Substances (G9) (IMO Resolution MEPC.169(57), as amended).

(3) Systems for the ballast water treatment shall be safe for the ship, its equipment and the crew.

PROTOTYPE BALLAST WATER TREATMENT TECHNOLOGIES

Article 16

(1) In establishing and carrying out any programme to test and evaluate new ballast water technologies, the Ministry can allow participation of ships necessary for effective testing of such technologies.

(2) For any ship that participates in a programme in order to test and evaluate new ballast water treatment technologies, the standard from Article 14 shall not start to apply to that ship until five years from the date on which the ship would otherwise be required to comply with such standard.

(3) For any ship that, after the date on which the standard from Article 13 has become effective for it, participates in a programme in order to test and evaluate new ballast water technologies with the potential to result in treatment technologies achieving a standard higher than that from Article 13, the standard from Article 14 shall not apply to that ship during the period of five years from the date of installation of such technology.

BRODSKE ISPRAVE I KNJIGE

Članak 17.

(1) Svi brodovi bruto tonaže 400 i više, hrvatske državne pripadnosti, u međunarodnoj plovidbi, i svi brodovi bruto tonaže 400 i više neovisno o državnoj pripadnosti koji uplovljavaju u luke u Republici Hrvatskoj, konstruirani za krcanje balastnih voda, moraju imati Međunarodnu svjedodžbu za upravljanje balastnim vodama, izdanu od nadležnih tijela države zastave broda ili u njeno ime.

(2) Svjedodžba iz stavka 1. izdaje se na rok ne dulji od pet godina i mora biti izdana na službenom jeziku države koja izdaje svjedodžbu u obliku sadržanom u Dodatku I Konvencije. Ako službeni jezik države koja izdaje svjedodžbu nije engleski, francuski ili španjolski tekst će uključiti i prijevod na jedan od navedenih jezika.

(3) Svjedodžba iz stavka 1. za brodove hrvatske državne pripadnosti izdaje se i ovjerava sukladno Tehničkim pravilima.

Članak 18.

(1) Svi brodovi na koje se primjenjuju odredbe ovog Pravilnika moraju imati na brodu i moraju primjenjivati Plan upravljanja balastnim vodama. (u daljnjem tekstu: Plan)

(2) Plan mora biti odobren od nadležnih tijela države čiju zastavu brod vije uzimajući u obzir primjenjive Smjernice Organizacije – Smjernice za upravljanje balastnim vodama i donošenje plana upravljanja balastnim vodama – G4 (Rezolucija MEPC.127(53).

(3) Plan mora biti specifičan za svaki pojedini brod i mora sadržavati najmanje:

– detaljne sigurnosne postupke za brod i posadu, povezane s upravljanjem balastnim vodama;

– detaljan opis djelovanja koja se moraju poduzeti radi primjene zahtjeva kod upravljanja balastnim vodama i dodatnih postupaka upravljanja balastnim vodama;

– detaljne postupke za odlaganje taloga u more i na kopno;

– postupke za usklađivanje upravljanja balastnim vodama na brodu koji uključuje ispuštanje u more s nadležnim vlastima države pod čijom nadležnošću je morsko područje u koje će se ispuštanje obaviti;

– odrediti časnika na brodu zaduženog za

SHIP'S DOCUMENTS AND BOOKS

Article 17

(1) All ships of 400 gross tonnage and above, of Croatian nationality, in international navigation, and all ships of 400 gross tonnage and above, regardless of their nationality, calling at ports in the Republic of Croatia and constructed for uptake of ballast water, shall have the International Ballast Water Management Certificate, issued by, or on behalf of, the competent authorities of the ship's flag state.

(2) Certificate referred to in paragraph 1 shall be issued for the period not longer than five years and shall be issued in the official language of the country issuing the certificate in the form defined in Appendix I to the Convention. If the official language of the country issuing the certificate is not English, French or Spanish, the text of the certificate shall include the translation to one of the mentioned languages.

(3) The certificate referred to in paragraph 1, for ships of Croatian nationality, shall be issued and verified in accordance with the Technical Rules.

Article 18

(1) All ships to which provisions of this Ordinance apply shall have onboard and apply the Ballast Water Management Plan (hereinafter: the Plan).

(2) The Plan shall be approved by competent authorities of the state whose flag the ship flies, taking into consideration the applicable guidelines of the Organisation – Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4) (Resolution MEPC.127(53).

(3) The Plan shall be specific to each ship and shall contain at least:

- detailed safety procedures for the ship and the crew, related to ballast water management;

- detailed description of activities which have to be taken for the purpose of application of the ballast water management requirements and supplemental ballast water management practices;

- detailed procedures for the disposal of sediments at sea and to shore;

- procedures for coordinating shipboard ballast water management that involves discharge to the sea with the competent authorities of the State under whose jurisdiction are waters where such discharge will take place;

pravilno provođenje Plana;

– zahtjeve za izvješćivanje za brod.

(4) Plan mora biti pisan na radnom jeziku posade, a ako radni jezik nije engleski, francuski ili španjolski, plan mora biti preveden na jedan od navedenih jezika. U odnosu na brodove hrvatske državne pripadnosti Plan mora biti napisan na hrvatskom ili engleskom jeziku.

(5) Plan za brodove hrvatske državne pripadnosti odobrava priznata organizacija.

Članak 19.

(1) Na svim brodovima na koje se primjenjuje ovaj Pravilnik. mora se nalaziti Knjiga o balastnim vodama koja može biti elektronički sustav zapisivanja, ili koja može biti uključena u drugi dnevnik ili sustav, i koja sadrži najmanje podatke sadržane u Dodatku II Konvencije.

(2) Obrazac Knjige o balastnim vodama za brodove hrvatske državne pripadnosti propisan je Tehničkim pravilima.

(3) Zapisi u Knjizi o balastnim vodama moraju se čuvati na brodu najmanje dvije godine nakon unosa zadnjeg zapisa, te nakon toga moraju biti sačuvani pod nadzorom kompanije još najmanje tri godine.

(4) U slučaju ispuštanja balastnih voda, slučajnog ili iznimnog, uslijed nenadanih situacija, u Knjigu o balastnim vodama unosi se zapis koji opisuje okolnosti i razloge takvog ispuštanja balastnih voda.

(5) Svaka radnja vezana uz balastne vode mora biti odmah i potpuno zabilježena u Knjizi o balastnim vodama. Svaki upis mora biti potpisan od časnika odgovornog za odnosnu radnju i svaka ispunjena stranica mora biti potpisana od zapovjednika.

(6) Upisi u Knjigu o balastnim vodama moraju biti na radnom jeziku posade. Ako taj jezik nije engleski, francuski ili španjolski, upisi moraju biti prevedeni na jedan od tih jezika.

(7) Knjiga o balastnim vodama mora biti spremna za inspekciju u svako doba, a u slučaju broda bez posade u teglju, može se nalaziti na tegljaču.

- designate the officer on board in charge of proper implementation of the Plan;

- reporting requirements for the ship.

(4) The Plan shall be written in the working language of the crew, and if the working language is not English, French or Spanish, the Plan shall be translated into one of the mentioned languages. With respect to ships of Croatian nationality, the Plan shall be written in Croatian or English.

(5) The Plan for ships of Croatian nationality shall be approved by a recognised organisation.

Article 19

(1) Each ship to which this Ordinance applies shall have on board a Ballast Water Record Book that may be an electronic record system, or that may be integrated into another record book or system, which shall contain at least the information specified in Appendix II to the Convention.

(2) The form of the Ballast Water Record Book for ships of Croatian nationality has been prescribed by Technical Rules.

(3) Ballast Water record book entries shall be kept on board the ship for a minimum period of two years after the last entry has been made and thereafter they shall be kept under the Company's control for a minimum period of another three years.

(4) In the event of the discharge of ballast water, accidental or exceptional, due to unexpected situations, an entry shall be made in the ballast water record book describing the circumstances of, and the reason for, the discharge.

(5) Each operation concerning ballast water shall be recorded, fully and without delay, in the Ballast Water Record Book. Each entry shall be signed by the officer in charge of the operation concerned and each completed page shall be signed by the master.

(6) The entries in the Ballast Water Record Book shall be in a working language of the crew. If that language is not English, French or Spanish the entries shall contain a translation into one of those languages.

(7) The Ballast Water Record Book shall be kept readily available for inspection at all reasonable times and, in the case of an unmanned ship under tow, may be kept on the towing ship.

UPRAVLJANJE TALOZIMA

Članak 20.

(1) Zabranjeno je odlagati u more taloge, te su svi brodovi dužni ukloniti taloge iz prostora namijenjenih prijevozu balastnih voda, u skladu s odredbama brodskog Plana upravljanja balastnim vodama.

(2) Talozi iz stavka 1. ovog članka moraju se prikupiti isključivo mehaničkim putem, te nakon toga odlagati u posebno namijenjene kopnene prihvatne uređaje.

(3) Brodovi na koje se primjenjuje članak 14. ovog Pravilnika moraju, bez ugrožavanja sigurnosti i radne učinkovitosti, biti projektirani i izgrađeni tako da omogućuju smanjenje unosa i neželjenog zadržavanja taloga, olakšano uklanjanje taloga te siguran pristup radi uklanjanja taloga i uzimanja uzoraka.

Članak 21.

(1) Lučka uprava ili tijelo koje upravlja lukom u kojima se obavlja čišćenje ili popravak balastnih tankova, dužno je osigurati odgovarajuća postrojenja za prihvat taloga uzimajući u obzir Smjernice G1– Smjernice o prihvatnim uređajima za taloge (IMO Rezolucija MEPC.152(55), kako je izmijenjena i dopunjena).

(2) Rad takvih postrojenja za prihvat ne smije uzrokovati nepotrebna kašnjenja brodova te mora osigurati sigurno uklanjanje takvih taloga prilikom kojega se ne narušavaju niti ugrožavaju okoliš, ljudsko zdravlje, imovina ili sredstva a u skladu s drugim pozitivnim zakonskim propisima o zaštiti okoliša.

(3) Ministarstvo će o svakom nedostatku takvog uređaja izvijestiti Organizaciju.

INSPEKCIJSKI NADZOR

Članak 22.

(1) Inspekcijski nadzor nad provedbom odredaba ovog Pravilnika provodi inspekcija sigurnosti plovidbe.

(2) Inspekcijski nadzor obavlja se sukladno pravilniku kojim se uređuje inspekcijski nadzor sigurnosti plovidbe, te primjenjivim međunarodnim smjernicama.

(3) Inspekcijski nadzor nad provedbom odredbi članka 21. provodi i inspekcija zaštite okoliša.

SEDIMENT MANAGEMENT

Article 20

(1) It is prohibited to discharge sediments into sea, and all ships shall remove and dispose of sediments from spaces designated to carry ballast water in accordance with the provisions of the ship's Ballast Water Management Plan.

(2) The sediments referred to in paragraph 1 of this Article shall be gathered by mechanical way only, and subsequently removed in specifically designed land-based reception facilities.

(3) Ships to which Article 14 of this Ordinance applies shall, without compromising safety or operational efficiency, be designed and constructed with a view to minimize the uptake and undesirable entrapment of sediments, facilitate removal of sediments, and provide safe access to allow for Sediment removal and sampling.

Article 21

(1) Port authority or the body managing the port, in which cleaning or repair of ballast tanks is performed, shall ensure appropriate sediment reception facilities, taking into consideration the Guidelines for sediment reception facilities (G1) (IMO Resolution MEPC.152(55), as amended).

(2) Operation of such reception facilities shall not cause unnecessary delays of ships, and shall ensure safe removal of such sediments, without disturbing or endangering the environment, human health, property or resources, in conformity with other environmental protection legislation.

(3) The Ministry shall inform the Organisation about all deficiencies of such facilities.

INSPECTION

Article 22

(1) Inspection of implementation of provisions of this Ordinance shall be performed by the safety of navigation inspection.

(2) Inspection shall be performed according to the ordinance regulating the safety of navigation inspection, and relevant international guidelines.

(3) Inspection of implementation of provisions of Article 21 shall also be performed by the environmental inspection.

Članak 23.

(1) U cilju provjere balastnih voda inspektor može zatražiti analizu od ustanove ovlaštene prema posebnim propisima odnosno laboratorija, o uzetim uzorcima i ispitivanju balastnih voda koji se namjerava ispustiti u more, a rezultati provedene analize daju se u obliku pisanog izvještaja.

(2) Ispitivanje balastnih voda sastoji se od znanstvene analize uzoraka u svrhu kontrole provedbe mjera upravljanja balastnim vodama. Uzimanje uzoraka i ispitivanje balastnih voda obavlja se sukladno Smjernicama G2 – Smjernicama za uzorkovanje balastnih voda (IMO rezolucija MEPC.173(58), kako je izmijenjena i dopunjena).

(3) Uzorci balastnih voda mogu se, na temelju naloga inspektora, uzeti iz tankova i prije uplovljavanja broda u luku, odnosno tijekom plovidbe.

(4) Rezultati ispitivanja balastnih voda ukrcanih u stranoj luci, provedenog od tijela ili organizacije ovlaštene za uzorkovanje i ispitivanje balastnih voda u toj luci mogu se priznati u Republici Hrvatskoj.

(5) Ako se analizom uzoraka utvrdi da brod nije proveo neku od mjera upravljanja balastnim vodama u skladu s ovim Pravilnikom, zabranit će se iskrcaj balastnih voda ako je moguće.

(6) Troškove uzimanja uzoraka i ispitivanja snosi brodar.

DUŽNOSTI POSADE

Članak 24.

U provedbi mjera upravljanja balastnim vodama posada broda mora biti upoznata sa svojim dužnostima specifičnima za brod na kojem služe te moraju, u skladu sa svojim dužnostima, biti upoznati s brodskim Planom upravljanja balastnim vodama.

Članak 25.

Poduzimat će se sve moguće mjere kako bi se izbjeglo nepotrebno zadržavanje ili kašnjenje radnih operacija broda, zbog primjene odredbi ovog Pravilnika.

Article 23

(1) For the purpose of ballast water inspection, inspector may request the institution approved according to special regulations or the approved laboratory, to analyse samples and test ballast water intended for discharge into the sea; the results of the analysis shall be provided in the form of a written report.

(2) Testing of ballast water consists of scientific analysis of samples for the purpose of control of implementation of the ballast water management measures. Sampling and testing of ballast water shall be performed according to Guidelines for Ballast Water Sampling (G2) (IMO Resolution MEPC.173(58), as amended).

(3) Ballast water samples, based on the inspector's order, can be taken from the tanks before calling of the ship at port, i.e. during navigation.

(4) The results of testing of ballast water taken up in a foreign port and conducted by the body or organisation authorized for sampling and testing of ballast water in that port may be recognized in the Republic of Croatia.

(5) If sample analysis establishes that the ship failed to perform any of the ballast water management measures in conformity with this Ordinance, discharge of ballast water shall be prohibited, if possible.

(6) Costs of sampling and testing shall be borne by the shipowner.

DUTIES OF CREW

Article 24

Crew shall be familiar with their duties in the implementation of ballast water management particular to the ship on which they serve and shall, in accordance to their duties, be familiar with the ship's Ballast Water Management Plan.

Article 25

All possible efforts shall be made to avoid unduly detention or delay of a ship for the purpose of application of the provisions of this Ordinance.

PRIJELAZNE I ZAVRŠNE ODREDBE

Članak 26.

(1) Ovaj Pravilnik stupa na snagu osmog dana od dana objave u »Narodnim novinama«.

(2) Stupanjem na snagu ovoga Pravilnika prestaju važiti odredbe Pravilnika o upravljanju i nadzoru vodenog balasta (»Narodne novine«, br. 55/07) .

Klasa: 011-01/12-02/54
Urbroj: 530-04-12-5
Zagreb, 5. studenoga 2012.
Ministar dr. sc. Siniša Hajdaš Dončić, v. r.

PRILOG I. OBRAZAC PRIJAVE BALASTNIH VODA

PRILOG II. SMJERNICE O DOBROVOLJNOJ PRIVREMENOJ PRIMJENI STANDARDA D1

«Opće smjernice o dobrovoljnoj privremenoj primjeni standarda D1 za izmjenu balastnih voda u odnosu na brodove koji plove između Sredozemnog mora i Sjeveroistočnog Atlantika i/ili Baltičkog mora»

TRANSITIONAL AND FINAL PROVISIONS

Article 26

(1) This Ordinance shall enter into force on the eighth day from the day of its publication in the Official Gazette of the Republic of Croatia.

(2) Upon entry into force of this Ordinance, the provisions of the Ordinance on Ballast Water Management and Control (Official Gazette No. 55/07) shall cease to apply.

Class: 011-01/12-02/54
Reg. No.: 530-04-12-5
Zagreb, 5 November 2012
The Minister Siniša Hajdaš Doncˇic´, Ph.D.

ANNEX I

BALLAST WATER REPORTING FORM

ANNEX II

GUIDANCE ON THE VOLUNTARY INTERIM APPLICATION OF THE D1 STANDARD

«General Guidance on the Voluntary Interim Application of the D1 Ballast Water Exchange Standard by vessels operating between the Mediterranean Sea and the North-East Atlantic and/or the Baltic Sea»

BALLAST WATER REPORTING FORM

1. VESSEL INFORMATION				2. VOYAGE INFORMATION		3. BALLAST WATER USAGE AND CAPACITY		
Vessel Name:				Arrival Port:			Ballast Water Capacity	Ballast Water on Board
IMO Number:				Arrival Date:		No. Of Tanks		
Owner:				Agent:				
Type*:				Last Port:	Last Country:	Volume (m^3 or MT)		
DWT:		GT:						
Flag:				Next Port:	Next Country:	Ballast Water Pump(s) Max Capacity (m^3/h)		
Call Sign:								

*Type codes: bulk (BC), roro (RR), container (CS), oil tanker (OT), chemical tanker (CT), oil/bulk ore (OB), general cargo (GC), reefer (RF), other (O)

4. CARGO OPERATIONS:	Total Cargo(Type/MT) to be Loaded		to be Discharged	
5. 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 management plan on board:	YES	NO	Management plan implemented:	YES NO

6. BALLAST WATER HISTORY: *Record all tanks to be deballasted in port state of arrival;* IF NONE GO TO #7 (use additional sheets as needed)

Tank/Holds List multiple source tanks separately	BW SOURCES				BW MANAGEMENT PRACTICES						BW DISCHARGES			
	Date dd/mm/yy	Port or Lat/Long	VOLUME (units)	Temp (units)	Date dd/mm/yy	End Point Lat/Long	VOLUME (units)	% Exch	Method (ER/FT/ALT)	Sea HT (m)	Date dd/mm/yy	Port or Lat/Long	VOLUME (units)	Salinity (units)

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

7. RESPONSIBLE OFFICER'S NAME (Printed and signature):

1. U očekivanju stupanja na snagu Međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima (BWM konvencija), od brodova koji plove između morskih područja definiranih u točki 3., očekuje se da od 1. listopada 2012. godine na dobrovoljnoj bazi primjenjuju sljedeće smjernice radi smanjenja rizika unošenja neautohtonih vrsta putem balastnih voda. Smjernice se odnose na brodove određene člankom 3. BWM konvencije, uzimajući u obzir izuzeća iz Pravila A-3 iste konvencije. Ove Smjernice ne zamjenjuju zahtjeve BWM konvencije, već predstavljaju dio privremenih Regionalnih strategija upravljanja balastnim vodama za Baltičko more, Sredozemno more i Sjeveroistočni Atlantik, koje u skladu sa člankom 13. stavkom 3. BWM konvencije razvijaju ugovorne stranke OSPAR konvencije, Helsinške konvencije ili Barcelonske konvencije*. Ove Smjernice se neće primjenjivati od trenutka kada je na brodu moguće primijeniti standard D-2, ili kada BWM konvencija stupi na snagu i brod je obvezan primijeniti standard D-2.

2. Ako je izmjenom balastnih voda na bilo koji način ugrožena sigurnost plovidbe broda, izmjenu ne treba provoditi. Ujedno, ove Smjernice se ne primjenjuju na krcanje ili ispuštanje balastnih voda i taloga koje se poduzima radi osiguravanja sigurnosti plovidbe broda u hitnim situacijama ili spašavanja života u Baltičkom moru ili Sjeveroistočnom Atlantiku.

3. Definicije:

Sjeveroistočni Atlantik:

– dijelovi Atlantskog i Arktičkog oceana i o njima ovisnih mora koji se prostiru sjeverno od 36° sjeverne geografske širine i između 42° zapadne geografske dužine i 51° istočne geografske dužine (ali isključujući Baltičko more i pojaseve južno i istočno od linija povučenih od Hasenore Head-a do Gniben Point-a, od Korshage do Spodsbjerg-a, i od Gilbjerg Head-a do Kullen-a, te Sredozemno more i o njemu ovisna mora do točke sjecišta paralele 36° sjeverne geografske širine i meridijana 5° 36' zapadne geografske dužine);

– dio Atlantskog oceana sjeverno od 59° sjeverne geografske širine i između 44° zapadne geografske dužine i 42° zapadne geografske dužine;

Baltičko more:

– Baltičko more i ulaz u Baltičko more omeđen

1. In anticipation of the coming into force of the International Maritime Organization's International Convention for the Control and Management of Ships' Ballast Water and Sediments (the BWM Convention), vessels operating between the marine areas as defined further in point 3, would be expected to apply on a voluntary basis, as from 1 October 2012 the following guidelines to reduce the risk of non-indigenous species invasion through ballast water. The guidelines are addressed to the vessels covered by Article 3 of the BWM, taking into account the exceptions in Regulation A-3 of that Convention. This Guidance does not replace the requirements of the BWM Convention, but provides the part of interim Ballast Water Regional Management Strategies for the Baltic Sea, the Mediterranean Sea and the North-East Atlantic being developed under Article 13(3) of the BWM Convention by the contracting parties to either the OSPAR Convention, the Helsinki Convention or the Barcelona Convention*. This Guidance will no longer apply when a ship is in a position to apply the D-2 Standard of this Convention, or the Ballast Water Management Convention comes into force and a ship has to apply the D-2 Standard.

2. If the safety of the vessel is in any way jeopardized by a ballast water exchange, it should not take place. Additionally these guidelines do not apply to the uptake or discharge of ballast water and sediments for ensuring the safety of the vessel in emergency situations or saving life at sea in the waters of the Baltic Sea and the North East Atlantic.

3. Definitions:

North-East Atlantic:

- those parts of the Atlantic and Arctic Oceans and their dependent seas which lie north of 36° north latitude and between 42° west longitude and 51° east longitude (but excluding the Baltic Sea and the Belts lying to the south and east of lines drawn from Hasenore Head to Gniben Point, from Korshage to Spodsbjerg and from Gilbjerg Head to Kullen, and the Mediterranean Sea and its dependent seas as far as the point of intersection of the parallel of 36° north latitude and the meridian of 5° 36' west longitude);

- that part of the Atlantic Ocean north of 59° north latitude and between 44° west longitude and 42° west longitude.

The Baltic Sea:

- the Baltic Sea and the entrance to the Baltic

paralelom kod Skaw-a u Skagerrak-u na 57 44.43'N; i

Sredozemno more:

– morske vode Sredozemnog mora uključujući zaljeve i mora, omeđen sa zapada meridijanom koji prolazi svjetionikom Cape Spartel, na ulazu u Gibraltarski tjesnac, te na istoku južnom granicom tjesnaca Dardaneli između svjetionika Mehmetcik i Kumkale.

4. Svaki brod koji plovi u tim vodama trebao bi:

– imati Plan upravljanja balastnim vodama u skladu sa Smjernicama za upravljanje balastnim vodama i razvojem planova upravljanja balastnim vodama (IMO rezolucija MEPC.127 (53)); i

– bilježiti sve operacije balastnim vodama u knjigu o balastnim vodama

5. Brodovi koji odlaze iz Sredozemnog mora i plove prema odredištima u Sjeveroistočnom Atlantiku ili u Baltičkom moru trebali bi izmijeniti svu vodu u balastnim tankovima u skladu sa standardom D-1 BWM konvencije, na udaljenosti od najmanje 200 nautičkih milja od najbližeg kopna u morskim vodama dubine od najmanje 200 metara, čim uplove u Sjeveroistočni Atlantik. Treba napomenuti da je najbolje mjesto za to u morskim vodama koje ispunjavaju navedene uvjete zapadno od Portugala, Španjolske i Francuske, jer su dubine morskih voda u Kanalu La Manche i njegovim prilazima, Sjevernom moru i Baltičkom moru većinom manje od 200 metara [1].

6. Brodovi koji dolaze u Sredozemno more iz Sjeveroistočnog Atlantika ili iz Baltičkog mora i plove prema odredištima u Sredozemnom moru, Crnom moru ili drugdje, trebali bi izmijeniti svu vodu u balastnim tankovima u skladu sa standardom D-1 BWM konvencije, na udaljenosti od najmanje 200 nautičkih milja od najbližeg kopna u morskim vodama dubine od najmanje 200 metara, prije nego napuste Sjeveroistočni Atlantik.

7. Ako, iz operativnih razloga, nije moguće obaviti izmjenu najmanje 200 nautičkih milja od najbližeg kopna u morskim vodama dubine od najmanje 200 metara, onda takva izmjena treba biti napravljena najdalje moguće od kopna izvan Sredozemnog mora, a u svakom slučaju najmanje 50 nautičkih milja od najbližeg kopna u morskim vodama dubine od najmanje 200 metara. Treba napomenuti da u Baltičkom moru nema područja koje ispunjava navedene uvjete.

Sea bounded by the parallel of the Skaw in the Skagerrak at 57 44.43'N; and,

The Mediterranean Sea:

- the maritime waters of the Mediterranean Sea proper, including its gulfs and seas, bounded to the west by the meridian passing through Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between the Mehmetcik and Kumkale lighthouses.

4. Each vessel operating in these waters should:

- have a Ballast Water Management Plan which complies with the Guidelines for ballast water management and development of ballast water management plans (G4) (IMO resolution MEPC.127(53)); and,

- record all ballast water operations in a ballast water record book.

5. Vessels leaving the Mediterranean Sea and proceeding to destinations in the North-East Atlantic or the Baltic Sea should exchange all their ballast tanks to the standards set out by the D-1 Standard of the Ballast Water Management Convention, at least 200 nautical miles from the nearest land in water at least 200 metres deep, as soon as they enter the North-East Atlantic. It should be noted that the best place to do this is in waters that meet these criteria to the west of Portugal, Spain and France, as most of the waters of the English Channel and its approaches, the North Sea and the Baltic Sea are less than 200m deep [1].

6. Vessels entering the Mediterranean Sea from the North-East Atlantic or the Baltic Sea and proceeding to destinations in the Mediterranean Sea, the Black Sea or elsewhere should exchange all their ballast tanks to the standards set out by the D-1 Standard of the Ballast Water Management Convention, at least 200 nautical miles from the nearest land in water at least 200 metres deep, before they leave the North-East Atlantic.

7. If, for operational reasons, exchange is not possible at least 200 nautical miles from the nearest land in water at least 200 metres depth, then such exchange should be undertaken as far from the nearest land as possible outside the Mediterranean Sea, and in all cases in waters at least 50 nautical miles from the nearest land in waters of at least 200 metres depth. It should be noted that nowhere in the Baltic Sea fulfils these criteria.

8. Ne bi trebalo ispuštati taloge tijekom čišćenja balastnih tankova u Baltičkom moru, ili unutar 200 nautičkih milja udaljenosti od kopna u Sjeveroistočnom Atlantiku ili Sredozemnom moru.

* Albanija, Alžir, Belgija, Bosna i Hercegovina, Hrvatska, Cipar, Danska, Egipat, Estonija, Europska unija, Finska, Francuska, Njemačka, Grčka, Island, Irska, Izrael, Italija, Latvija, Libanon, Libija, Litva, Luksemburg, Malta, Monako, Crna gora, Maroko, Nizozemska, Norveška, Poljska, Portugal, Ruska Federacija, Slovenija, Španjolska, Švedska, Švicarska, Sirija, Tunis, Turska, i Ujedinjena kraljevina Velike Britanije i Sjeverne Irske.

[1] Drukčiji režim za izmjenu balastnih voda mogao bi se razmatrati za brodove koji odlaze iz Sredozemnog mora ili Sjeveroistočnog Atlantika i plove prema odredištima u blizini Tarrifa Cape-a.

8. The release of sediments during the cleaning of ballast tanks should not take place within the Baltic Sea, or within 200 nautical miles of the coastline of the North-East Atlantic or the Mediterranean Sea.

* Albania, Algeria, Belgium, Bosnia and Herzegovina, Croatia, Cyprus, Denmark, Egypt, Estonia, The European Union, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Latvia, Lebanon, Libya, Lithuania, Luxembourg, Malta, Monaco, Montenegro, Morocco, The Netherlands, Norway, Poland, Portugal, The Russian Federation, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, and the United Kingdom of Great Britain and Northern Ireland.

[1] For vessels leaving the Mediterranean or the North East Atlantic proceeding to destinations near Tarrifa Cape a different regime for ballast water exchange could be considered.

4.3 Italy

4.3. ITALY

2010 DECREE ESTABLISHING NATIONAL PROCEDURES FOR THE ISSUANCE OF TYPE APPROVAL CERTIFICATES FOR BALLAST WATER SYSTEMS PRODUCED BY ITALIAN MANUFACTURERS, AS AMENDED

(ORIGINAL TEXT)

DECRETO DEL MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE 16 GIUGNO 2010 "PROCEDURE NAZIONALI PER IL RILASCIO DELLA CERTIFICAZIONE DI TIPO APPROVATO PER IMPIANTI DI TRATTAMENTO DI ACQUE DI ZAVORRA PRODOTTI DA AZIENDE ITALIANE", E SUCCESSIVE MODIFICHE

Il Direttore Generale della Direzione per la protezione della natura e del mare del Ministero dell'ambiente e della tutela del territorio e del mare di concerto con il Direttore Generale della Direzione generale per il trasporto marittimo e per vie d'acqua interne del Ministero delle infrastrutture e dei trasporti

Vista la legge 31 dicembre 1982, n. 979, recante disposizioni per la difesa del mare;

Vista la legge 8 luglio 1986, n. 349 «Istituzione del Ministero dell'ambiente e norme in materia di danno ambientale»;

Visto il decreto del Presidente della Repubblica del 3 agosto 2009, n. 140, denominato «Regolamento sulla riorganizzazione del Ministero dell'ambiente e della tutela del territorio e del mare»;

Viste le competenze assegnate dal sunnominato decreto del Presidente della Repubblica alla Direzione generale per la protezione della natura e del mare, di seguito denominata l'Amministrazione;

Visto il decreto legislativo del 30 marzo 2001, n. 165, recante norme generali sull'ordinamento del lavoro alle dipendenze delle amministrazioni pubbliche;

Vista la Convenzione dell'Organizzazione Marittima Internazionale delle Nazioni Unite (IMO) per il controllo e la gestione delle acque di zavorra e sedimenti delle navi del 13 febbraio 2004, di seguito denominata Convenzione;

Viste le Linee guida sulla certificazione degli impianti di trattamento delle acque di zavorra delle navi emanate dall'IMO con la risoluzione MEPC.174(58) del 10 ottobre 2008;

(UNOFFICIAL TRANSLATION)

2010 DECREE OF THE MINISTRY FOR THE PROTECTION OF ENVIRONMENT, LAND AND SEA, "NATIONAL PROCEDURES FOR THE ISSUANCE OF TYPE APPROVAL CERTIFICATES FOR BALLAST WATER SYSTEMS PRODUCED BY ITALIAN MANUFACTURERS", AS AMENDED

The General Director of the Directorate General for Nature and Sea Protection of the Ministry for the Protection of Environment, Land and Sea in agreement with the General Director of the Directorate General of Maritime transport and inland waterways of the Ministry of Infrastructure and Transport

Recalling the Law 31 December 1982, No. 979, containing provisions for the defense of the sea;

Recalling the Law 8 July 1986, N. 349 "Establishment of the Ministry of Environment and rules on environmental damage";

Recalling the Decree of the President of the Republic 3 August 2009, No. 140, "Regulation on the reorganization of the Ministry Environment and Protection of Land and Sea";

Recalling the competences that the above mentioned Decree of the President of the Republic assigned to the Directorate General for Nature and Sea Protection, hereinafter referred to as the Administration;

Recalling the Legislative Decree 30 March 2001, No. 165, laying down general rules for the organization of work and employment in the public administration;

Recalling the United Nations International Maritime Organisation (IMO) Convention for the Control and Management of Ships' Ballast Water and Sediments of 13 February 2004, hereinafter the "Convention";

Recalling the Guidelines for Approval of Ballast Water Management Systems issued by IMO with Resolution MEPC.174(58) adopted on 10

Viste le Linee guida sulla certificazione degli impianti di trattamento delle acque di zavorra delle navi che impiegano sostanze attive emanate dall'IMO con la risoluzione MEPC.169(57) del 4 aprile 2008;

Considerato che, ai sensi della Convenzione nonché delle conseguenti Linee guida vincolanti emanate dall'IMO per la sua applicazione e implementazione, la certificazione di tipo approvato per gli impianti di trattamento di acque di zavorra delle navi viene rilasciata dallo Stato di bandiera o comunque dallo Stato cui appartiene la ditta costruttrice dell'impianto;

Vista la direttiva 98/8/CE del 16 febbraio 1998 emanata dal Parlamento europeo che istituisce un quadro normativo in materia di commercializzazione dei biocidi, al fine di garantire un elevato livello di tutela della salute umana e dell'ambiente ed il buon funzionamento del mercato interno;

Visto il decreto legislativo 174 del 25 febbraio 2000 «Attuazione della direttiva 98/8/CE in materia di immissione sul mercato di biocidi»;

Vista la direttiva 96/98/CE del Consiglio del 20 dicembre 1996 sull'equipaggiamento marittimo con le modifiche apportate nella direttiva 2009/26/CE;

Visto il decreto del Presidente della Repubblica del 6 ottobre 1999, n. 407 «Regolamento recante norme di attuazione delle direttive 96/98/CE e 98/85/CE relative all'equipaggiamento marittimo» e successive modifiche;

Visto il regolamento (CE) n.1907/2006 del Parlamento europeo e del Consiglio del 18 dicembre 2006, concernente la registrazione, la valutazione, l'autorizzazione e la restrizione delle sostanze chimiche (REACH);

Visto il regolamento (CE) n. 765/2008 del Parlamento europeo e del Consiglio del 9 luglio 2008, che pone norme in materia di accreditamento e vigilanza del mercato per quanto riguarda la commercializzazione dei prodotti e che abroga il regolamento (CEE) n. 339/93;

Visto il decreto direttoriale prot. DPN-DEC-2009-0000803 del 15 giugno 2009 che istituisce presso la Direzione protezione della natura del Ministero dell'ambiente della tutela del territorio e del mare un tavolo tecnico, costituito dai rappresentanti dell'ISPRA, del Ministero delle infrastrutture e dei trasporti, del Comando generale delle capitanerie di porto e del Reparto ambientale marino, per la predisposizione di procedure nazionali per ottenere la certificazione

October 2008;

Recalling further the Guidelines on the Procedure for Approval of Ballast Water Management Systems that make use of Active Substances issued by the IMO with Resolution MEPC.169(57) adopted on 4 April 2008;

Having considered that, according to the Convention as well as to the binding Guidelines issued by the IMO for its application and implementation, the Type Approval Certificate for ballast water management systems is issued by the flag State or, in any case, by the State of the manufacturer which produces the system;

Recalling the Directive n. 98/8/EC of 16 February 1998 of the European Parliament and of the Council concerning the placing of biocidal products on the market, aiming at ensuring a high level of protection of human health and the environment and the good functioning of the internal market;

Recalling the Legislative Decree No. 174 of 25 February 2000 "Implementing Directive No. 98/8/EC concerning the placing of biocidal products on the market";

Recalling the Directive No. 96/98/EC of the Council of 20 December 1996 on marine equipment as amended by Directive n. 2009/26/EC;

Recalling the Decree of the President of the Republic of 6 October 1999, No. 407 "Regulation implementing provisions of the Directives 96/98/EC and 98/85/EC relating to marine equipment", as amended;

Recalling the Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

Recalling the Regulation (EC) No. 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No. 339/93;

Recalling the Directorial Decree registered as No. DPN-DEC-2009-0000803 of 15 June 2009 establishing within the General Directorate of Nature Protection of the Ministry of the Environment, Land and Sea a technical group including representatives from ISPRA, from the Ministry of Infrastructure and Transport, from

di conformità al tipo approvato per un impianto di trattamento delle acque di zavorra delle navi, per la predisposizione dei relativi necessari decreti, nonchè per fornire il necessario supporto tecnico scientifico sulla materia e per seguire le successive attività connesse al rilascio delle certificazioni;

Visto il verbale redatto in data 27 novembre 2009 con cui il tavolo tecnico ha approvato il testo del presente decreto, trasmesso all'Amministrazione in data 30 novembre 2009;

Ritenuto necessario procedere alla definizione di procedure nazionali volte al riconoscimento della conformità al tipo approvato di impianti di trattamento delle acque di zavorra delle navi, nonché della loro idoneità tecnica e della ecocompatibilità dei prodotti eventualmente utilizzati, come da specifiche Linee guida emanate dall'IMO, anche allo scopo di non precludere ad aziende nazionali la possibilità di entrare nel mercato mondiale degli impianti di trattamento delle navi;

Decreta:

Art. 1

1. Il presente decreto definisce le procedure necessarie al riconoscimento della conformità al tipo approvato degli impianti di trattamento delle acque di zavorra delle navi come stabilito dalla Convenzione e dalle Linee guida sulla certificazione degli impianti di trattamento delle acque di zavorra delle navi adottate dall'IMO con la risoluzione MEPC.174(58) del 10 ottobre 2008 e dalle Linee guida sulla certificazione degli impianti di trattamento delle acque di zavorra delle navi che utilizzano sostanze attive, adottata dall'IMO con la risoluzione MEPC.169 (57) del 4 aprile 2008.

2. I dati da fornire ed i tipi di test da effettuare ai fini del riconoscimento di idoneità dell'impianto, con relative specifiche tecniche e metodi di analisi, sono quelli indicati dalle richiamate Linee guida relative alla certificazione di impianti di trattamento di acque di zavorra delle navi e alla certificazione di impianti di trattamento che usano sostanze attive emanate dall'IMO e sono riportati rispettivamente negli allegati 1 e 2, che costituiscono parte integrante e sostanziale del presente decreto e di cui si fornisce una traduzione non ufficiale in lingua italiana.

the Coast Guard Headquarters as well as from the Coast Guard Marine Environmental Unit, to prepare national procedures for obtaining the Type Approval Certificate for ships' ballast water management systems, to prepare related decrees as well as to provide the technical and scientific support needed on the matter and to carry out the activities related to the issuance of the certificates;

Recalling the report issued on 27 November 2009 by which the technical committee agreed on the text of this decree, that was sent to the Administration the 30th of November 2009;

Having deemed necessary to define national procedures for the recognition of the conformity to type approval of the ballast water management systems, as well as their technical suitability and the use of products environmentally friendly, according to the specific guidelines issued by the IMO, also in order not to foreclose to national manufacturers the chance to enter the world ballast water management systems market;

Decrees

Article 1

1. This decree defines the procedures necessary to recognize the conformity to Type Approval of ballast water management systems, as were established by the Convention and related Guidelines on the approval of ballast water management systems adopted on 10 October 2008 by IMO through Resolution MEPC.174(58) and the Guidelines procedure for approval of ballast water management systems that make use of active substances, adopted on 4 April 2008 by IMO with Resolution MEPC.169(57).

2. Data to be provided and tests to be carried out for the recognition of the system suitability, and related technical specifications and analysis methods, are specified in the recalled guidelines concerning approval of ballast water management systems and approval of ballast water management systems that make use of active substances as adopted by the IMO and contained in Annexes 1 and 2 to this decree, of which form an integral and substantial part, and of which an un-official Italian translation is provided.

Art. 2

1. Le società produttrici di impianti di trattamento di acque di zavorra che intendono ottenere la certificazione di tipo approvato, devono presentare istanza ad un Organismo notificato (O.N.) ai sensi del decreto del Presidente della Repubblica del 6 ottobre 1999, n. 407 e successive modifiche.

2. L'O.N. deve eseguire le prove a mare previste nell'allegato 1 del presente decreto esclusivamente su una nave da questo classificata.

3. Le istanze di cui al comma 1 devono essere presentate in duplice copia e devono essere corredate dalla documentazione tecnica prevista negli allegati al presente decreto redatta in lingua italiana ed inglese. Una copia dell'istanza e della documentazione, in formato cartaceo ed in formato elettronico, viene inviata all'Amministrazione a cura dell' O.N.

4. L'Amministrazione procede ad effettuare le verifiche sulle attivita' dell'O.N. di cui all'art. 3 del presente decreto, secondo le disposizioni di cui all'art. 7 comma 3 del decreto del Presidente della Repubblica del 6 ottobre del 1999, n. 407 e successive modifiche, per il corretto svolgimento delle procedure previste negli Allegati 1 e 2 del presente Decreto.

Art. 3

1. Qualora l'impianto non preveda l'uso di sostanze attive, l'O.N. verifica che siano state eseguite tutte le prove descritte nell'allegato 1 del presente decreto, sia a banco che sulla nave. A seguito dell'esito positivo delle prove, l'O.N. rilascia la certificazione di tipo approvato, per conto dell'Amministrazione, provvedendo al contempo ad informarne l'Amministrazione stessa.

2. Qualora l'impianto preveda l'utilizzo di sostanze attive, l'O.N. emette il certificato di tipo approvato solo dopo che l'IMO avrà rilasciato il Basic approval (approvazione dell'uso della sostanza in sè) ed il Final approval (approvazione dell'impianto di trattamento).

3. Per ottenere il Basic approval il produttore prepara la documentazione secondo l'allegato 2 del presente decreto. L'O.N. provvede ad inoltrare apposita istanza all'Amministrazione corredata dalla documentazione relativa all'avvenuta esecuzione dei test e delle prove di laboratorio previsti dall'allegato 2, redatta secondo quanto previsto dal GESAMP (Group of Experts on Scientific Aspects of Marine

Article 2

1. Any manufacturer of ballast water management systems who wants to obtain the Type approval, must submit an application to a Notified Organization (N.O.) according to the Decree of the President of the Republic of 6 October 1999, No.407 and subsequent amendments.

2.The N.O. shall carry out tests at sea according to Annex 1 to this decree exclusively on a ship that has been classified by the same Organization.

3. Applications referred to in paragraph 1 shall be submitted in two copies and must be accompanied by the technical documentation foreseen in the annexes to this decree, written both in Italian and in English languages. A copy of the application and of related documentation, both on paper and in electronic format, is sent to the Administration through the N.O..

4. The Administration shall control the activities performed by the N.O. according to article 3 of this decree, in accordance with provisions of article 7, paragraph 3 of the Decree of the President the Republic of 6 October 1999, No. 407 as amended, for the duly implementation of the procedures contained in Annexes 1 and 2 of this decree.

Article 3

1. If the system does not make use of active substances, the N.O. verifies that all tests described in Annex 1 to this decree have been carried out, both on the bench and on the ship. Following the successful completion of the tests, the N.O. issues, on behalf of the Administration, the Type Approval Certificate, at the same time informing the same Administration.

2. If the system makes use of active substances, the N.O. issues the Type Approval Certificate only after IMO will have granted the Basic approval (the substance use approval) and the Final approval (the treatment system approval).

3. To obtain the Basic approval the manufacturer prepares the documentation in accordance with Annex 2 of this decree. The N.O. submits an application to the Administration including the documentation on the tests and laboratory tests foreseen in Annex 2 that have been performed, drafted according to GESAMP

Environmental Protection dell'ONU) nella Circolare dell'IMO BWM.2/Circ.13. A seguito di valutazione positiva della documentazione prodotta, l'Amministrazione provvede ad inoltrare all'IMO l'istanza e la relativa documentazione per la valutazione da parte del GESAMP ai fini del rilascio del Basic approval.

4. L'Amministrazione comunica all'O.N. l'avvenuto conseguimento del Basic approval al fine di consentire l'esecuzione delle prove a mare previste nell'allegato 1 del presente decreto. A seguito del completamento delle prove a mare e di valutazione positiva della documentazione prodotta, l'Amministrazione provvede ad inoltrare all'IMO l'istanza e la relativa documentazione per il rilascio dal parte dell'IMO del Final approval dopo valutazione positiva del GESAMP.

5. L'Amministrazione comunica all'O.N. l'avvenuto conseguimento del Final approval da parte dell'IMO ai fini del rilascio da parte dell'O.N. della certificazione di tipo approvato.

6. I test e le prove di laboratorio di cui agli allegati 1 e 2 al presente decreto, devono essere eseguiti esclusivamente da laboratori che dimostrino di operare secondo un sistema di qualità conforme alla norma ISO/IEC 17025.

7. L'istanza di cui al comma 3 e la documentazione ad essa relativa vengono esaminate dall'Amministrazione con l'ausilio dell'apposito tavolo tecnico istituito presso il Ministero dell'ambiente e della tutela del territorio e del mare con decreto direttoriale prot. DPN-DEC-2009-0000803 del 15 giugno 2009. Il Tavolo tecnico esprime le proprie valutazioni entro 60 giorni dalla ricezione della richiesta completa di tutta la occorrente documentazione puo' richiedere attraverso l'O.N. tutti i chiarimenti e le integrazioni alla documentazione presentata ritenuti necessari. Qualora nel corso dell'istruttoria si renda necessaria l'acquisizione di chiarimenti e/o di documentazione integrativa, la richiesta viene fatta dall'Amministrazione attraverso l'O.N. ed il termine di 60 giorni è sospeso fino alla data di ricevimento della suddetta documentazione o dei richiesti chiarimenti. Una volta determinato il parere favorevole del Tavolo tecnico, l'Amministrazione invia nel temine di 30 giorni la documentazione e il parere favorevole all'IMO per l'esame del GESAMP. In caso di parere negativo l'Amministrazione ne dà comunicazione al produttore tramite l'O.N. entro lo stesso tempo di 30 giorni.

(UN Group of Experts on Scientific Aspects of Marine Environmental Protection) methodology as contained in IMO Circular BWM.2/Circ.13. After a positive assessment of the documentation, the Administration submits the application and related documentation to IMO for the GESAMP assessment needed to obtain the Basic approval.

4. The Administration communicates to the N.O. that the Basic approval has been granted as to allow the tests at sea foreseen in Annex 1 to this decree to be performed. After the completion of the tests at sea and following the positive assessment of the documentation, the Administrations submits to IMO the application including relevant documentation for the granting of the Final approval, following the positive assessment by GESAMP.

5. The Administration informs the N.O. of the Final approval granted by IMO in order to allow the issuance of the Type Approval Certificate.

6. Tests and laboratory tests foreseen in Annexes 1 and 2 to this decree, may only be performed by laboratories that demonstrate that they have in place a quality system conform to ISO/IEC 17025 standard.

7. The application referred to in paragraph 3 as well as related documentation are examined by the Administration with the support of the technical group set up at the Ministry of Environment and Protection of Land and Sea by Directorial Decree prot. DPN-DEC-2009-0000803 of 15 June 2009. The technical group assesses the application, complete with all the documentation, within 60 days from the day of the receival, and may ask through the N.O. for any documentation clarification and integration it might deemed necessary. If, during the assessment, clarifications and/or additional documents are needed, the Administration request is made through the N.O. and the 60 days deadline is suspended until the date of receipt of the required documentation or clarification. Once the technical goup had express its positive opinion, the Administration sends both the positive opinion and the documentation to IMO for the GESAMP assessment within a 30 days deadline. In the event of a negative opinion, the Administration informs the manufacturer through the N.O. within the same 30 days deadline.

Art. 4

1. Sono poste a carico della società di cui all'art. 2, comma 1, le spese di missione connesse alla presentazione da parte dell'Amministrazione dell'istanza di cui al comma 3 dell'art. 3 presso il Gruppo di lavoro sulle acque di zavorra del Comitato per la protezione dell'ambiente marino (M.E.P.C.) dell'IMO a Londra.

2. Sono altresì a carico della società di cui al comma precedente, le spese di missione per eventuali sopralluoghi o verifiche degli impianti di trattamento che si rendessero necessari sia a terra che a bordo.

Roma, 16 giugno 2010
Il Direttore Generale della Direzione per la protezione della natura e del mare, Cosentino
Il Direttore Generale della Direzione generale per il trasporto marittimo e per le vie d'acqua interne, Puja

Allegato 1 - Risoluzione MEPC.174(58), adottata il 10 ottobre 2008 "Linee Guida per l'approvazione dei Sistemi di Gestione dell'acqua di Zavorra (G8)"
(*omissis*)

Allegato 2 - Risoluzione MEPC.169(57), adottata il 4 aprile 2008 "Procedura per l'approvazione dei sistemi di gestione dell'acqua di zavorra che utilizzano sostanze attive (G9)"
(*omissis*)

Article 4

1. Travelling expenses connected to the presentation in London of the application referred to in paragraph 3 of article 3, to IMO Marine Environment Protection Committee (MEPC) Ballast Water Working Group are borne by the manufacturer referred to in article 2, paragraph 1.

2. The manufacturer referred to in the previous paragraph, shall also bear the travelling expenses for any inspection or surveys of treatment systems that would be deemed necessary both on land and on board.

Rome, the 16th of June 2010
The General Director of the Directorate General for Nature and Sea Protection, Cosentino
The General Director of the Directorate General of Maritime Transport and Inland Waterways, Puja

Annex 1 - Resolution MEPC.174(58), adopted on 10 October 2008 "Guidelines for Approval of Ballast Water Management Systems (G8)"
(*omissis*)

Allegato 2 - Resolution MEPC.169(57), adopted on 4 April 2008 "Procedure for Approval of Ballast Water Management Systems that Make Use of Active Substances (G9)"
(*omissis*)

4.4 Montenegro

4.4. MONTENEGRO

2011 RATIFICATION LAW

(ORIGINAL TEXT)

UKAZ O PROGLAŠENJU ZAKONA O POTVRĐIVANJU MEĐUNARODNE KONVENCIJE O NADZORU I UPRAVLJANJU BRODSKIM BALASTNIM VODAMA I TALOZIMA, 2004.

Na osnovu člana 95 tačka 3 Ustava Crne Gore donosim
Ukaz o proglašenju zakona o potvrđivanju međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima, 2004.

Proglašavam Zakon o potvrđivanju Međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima, 2004., koji je donijela Skupština Crne Gore 24. saziva, na petoj sjednici prvog redovnog (proljećnjeg) zasijedanja u 2011. godini, dana 26. maja 2011. godine.

Broj: 01- 700/2
Podgorica, 06.06.2011. godine

Predsjednik Crne Gore
Filip Vujanović, s.r.

Na osnovu člana 82 stav 1 tač. 2 i 17 i člana 91 stav 1 Ustava Crne Gore, Skupština Crne Gore 24. saziva, na petoj šednici prvog redovnog (proljećnjeg) zasijedanja u 2011. godini, dana 26. maja 2011. godine, donijela je Zakon o potvrđivanju međunarodne konvencije o nadzoru i upravljanju brodskim balastnim vodama i talozima, 2004.

Član 1
Potvrđuje se Međunarodna konvencija o nadzoru i upravljanju brodskim balastnim vodama i talozima, 2004. sačinjena u Londonu, 13. februara 2004. godine, u originalu na arapskom, kineskom, engleskom, francuskom, ruskom i španskom jeziku.

Član 2
Tekst Konvencije iz člana 1 ovog zakona, u originalu na engleskom i prevodu na crnogorski jezik glasi:
(omissis)

(UNOFFICIAL TRANSLATION)

DECREE ON THE PROMULGATION OF THE LAW ON RATIFICATION OF THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004

Pursuant to Article 95, item 3 of the Constitution of Montenegro, I hereby issue the Decree on the promulgation of the law on ratification of the International Convention for the Control and management of Ships' Ballast Water and Sediments, 2004.

I proclaim the Law on ratification of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, as approved by the 24th Assembly of the Parliament of Montenegro, on its fifth meeting of the first regular (spring) session in 2011, on the 26th May 2011.

No. 01- 700/2
Podgorica, 06.06.2011

President of Montenegro
Filip Vujanović, s.r.

Pursuant to Article 82, paragraph 1 items 2 and 17 and Article 91, paragraph 1 of the Constitution of Montenegro, the Parliament of Montenegro, during its 24th Assembly, the fifth sitting of the first regular (spring) session in 2011, on the 26th May 2011 the Commission adopted the Law on Ratification of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004.

Article 1
Confirms the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, made in London, on February 13, 2004, in the original Arabic, Chinese, English, French, Russian and Spanish languages.

Article 2
The text of the Convention under Article 1 of this law, originally in English and translated into Montenegrin language reads:
(omissis)

2011 LEGISLATION ON THE PREVENTION OF POLLUTION FROM SHIPS, AS AMENDED (EXTRACTS)

(ORIGINAL TEXT)

ZAKON O ZAŠTITI MORA OD ZAGAĐIVANJA SA PLOVNIH OBJEKATA

("Službeni list Crne Gore", br. 020/11 od 15.04.2011, 026/11 od 30.05.2011, 027/14 od 30.06.2014)

I. OSNOVNE ODREDBE

Član 1

Ovim zakonom uređuje se zaštita mora od zagađivanja sa plovnih objekata koji plove ili se nalaze u unutrašnjim morskim vodama i teritorijalnom moru Crne Gore (u daljem tekstu: vode Crne Gore), prihvat i rukovanje otpadom u lukama, kao i odgovornost i naknada štete u slučaju zagađivanja.

Član 2

Brodu koji vije zastavu Crne Gore i brodu koji vije stranu zastavu dozvoljena je plovidba u vodama Crne Gore u skladu sa odredbama ovog zakona i zakona kojim se uređuje sigurnost plovidbe, ako njegova konstrukciona i plovna svojstva, mašine, uređaji i oprema koji služe održavanju sigurnosti plovidbe broda, po tehničkim svojstvima, količini, vrsti i rasporedu na brodu, odgovaraju tehničkim zahtjevima Međunarodne pomorske organizacije (IMO).

Provjeru ispunjenosti zahtjeva iz stava 1 ovog člana, za brod koji vije zastavu Crne Gore vrši organ uprave nadležan za poslove sigurnosti plovidbe (u daljem tekstu: organ uprave), odnosno organizacija priznata od Evropske komisije za vršenje tehničkog nadzora i statutarnu sertifikaciju pomorskih brodova (u daljem tekstu: priznata organizacija), u skladu sa zakonom kojim se uređuje sigurnost plovidbe.

Na osnovu izvršene provjere, odnosno ispunjenosti zahtjeva iz stava 1 ovog člana, organ uprave, odnosno priznata organizacija izdaje odgovarajuće sertifikate (brodske isprave, svjedočanstva, knjige, zapisi i sl.).

(UNOFFICIAL TRANSLATION)

2011 LAW ON THE PREVENTION OF SEA POLLUTION FROM VESSELS

I. GENERAL PROVISIONS

Article 1

This Law regulates the protection of the sea against pollution from vessels navigating or staying within inland sea waters and territorial sea of Montenegro (hereinafter referred to as the 'waters of Montenegro'), reception and management of waste in ports as well as liability and compensation for damage in case of pollution.

Article 2

Vessels flying the flag of Montenegro and vessels flying a foreign flag are allowed to navigate in the waters of Montenegro in accordance with the provisions of this law and other laws which regulate the safety of navigation, if their construction and navigational characteristics, engines, installations and equipment which serve to maintain vessel's safety of navigation, their technical characteristics, quantities, types and arrangements on board comply with the technical requirements of the International Maritime Organization (IMO).

The control of compliance with the requirements referred to in paragraph 1 of this Article for domestic vessels is conducted by the competent authority for the safety affairs (hereinafter referred to as the 'competent authority') or by an organization recognized by the European Commission to conduct technical survey and statutory certification of seagoing vessels (hereinafter referred to as the 'recognized organization'), in accordance with the law dealing with the safety of navigation.

On the basis of survey performed and compliance with the requirements set in paragraph 1 of this Article, competent authority or recognized organization shall issue appropriate certificates (ship's papers, certificates, books, records, etc.).

Član 3

Pojedini izrazi upotrijebljeni u ovom zakonu imaju sljedeća značenja: (*omissis*)

2) balastna voda je voda uzeta iz mora, rijeke ili jezera u cilju ispravljanja uzdužnog i poprečnog nagiba, gaza, stabiliteta i pritiska plovnog objekta, a koja se ne prevozi kao teret; (*omissis*)

4) brod je plovni objekat koji saobraća morem, uključujući i hidroglisere, hidroavione i plutajuće plovne objekte, osim ratnih brodova i brodova koje koriste organi državne uprave;

5) čisti balast je balastna voda u tanku koji je, nakon poslednjeg prevoza ulja, očišćen i koja prilikom ispuštanja u čistu i mirnu morsku vodu po lijepom danu ne stvara vidljive tragove ulja na površini vode ili na obližnjem kopnu niti izaziva taloženje teškog ostatka ulja ili emulzije ispod površine vode ili na obližnjem kopnu, a ne prelazi 15 ppm; (*omissis*)

11) ispuštanje je svako ispuštanje iz plovnog objekta, i to: isticanje, odstranjivanje, prosipanje, curenje, pumpanje, izbacivanje ili pražnjenje; (*omissis*)

15) korisnik luke je organ uprave, odnosno pravno lice koje upravlja lukom ili dijelom luke ili pravno ili fizičko lice kome je dodijeljeno pravo korišćenja luke ili dijela luke (koncesija); (*omissis*)

18) luka je morski i sa morem neposredno povezani kopneni prostor s izgrađenim i neizgrađenim obalama, gatovima, lukobranima, objektima, uređajima i postrojenjima namijenjenim za pružanje lučkih usluga i obavljanje drugih djelatnosti koje su sa njima u privrednoj, saobraćajnoj i tehnološkoj vezi; (*omissis*)

21) odvojeni balast je balastna voda koja se unosi u tank isključivo namijenjen za prevoz balasta, a koji je odvojen od tečnog tereta i sistema goriva; (*omissis*)

25) P&A Priručnik je priručnik o postupcima i mjerama u vezi sa teretom, ostacima tereta i balastnim vodama kod plovnih objekata koji prevoze štetne tečne materije u rasutom stanju;

26) plan krcanja tereta je plan slaganja ukrcanog tereta u brodskim skladištima ili tankovima tereta, koji prikazuje brodska skladišta ili tankove tereta u horizontalnom, vertikalnom ili nekom drugom prikladnom presjeku sa ucrtanim položajem pojedinih partija tereta;

Article 3

Terms used in this Law shall have the following meanings: (*omissis*)

2) ballast water means the water taken on board a ship from sea, river or lake to control longitudinal and traverse trim, draught, stability and stresses of the ship, and which is not transported as cargo; (*omissis*)

4) ship means a vessel intended for sea navigation including hydrofoils, hydroplanes and floating vessels, other than warships and ships used by competent authorities;

5) clean ballast is the ballast in a tank which, since oil was last carried therein, has been so cleaned that effluent therefrom if it were discharged from a ship into clean calm water on a clear day would not produce visible traces of oil on the surface of the water or on adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines and does not exceed 15 ppm; (*omissis*)

11) discharge means any discharge from a vessel, including: release, disposal, spilling, leaking, pumping, emitting or emptying; (*omissis*)

15) port beneficiary means the competent body, or legal entity which manages a port or part thereof or legal entity or natural person who is awarded the right to use a port or part thereof (concession); (*omissis*)

18) port means the sea or with sea immediately connected land area with developed or undeveloped coasts, piers, jetties, buildings, equipment and facilities intended to provide port services and provision of other activities which have economic, transportation and technological connection; (*omissis*)

21) segregated ballast is the ballast water introduced into a tank which is used exclusively for the carriage of ballast and which is separated from the liquid cargo and fuel system; (*omissis*)

25) P&A Manual is the manual on procedures and measures related to cargo, cargo residues and ballast waters for vessels carrying noxious liquid substances in bulk;

26) cargo load plan means a plan for the distribution of loaded cargo into ship's cargo holds or tanks, meaning that it shows the ship's holds or tanks in horizontal, vertical or other appropriate cross-section with plotted positions of individual lots;

27) plovni objekat je brod, plovec′e postrojenje, c̆amac i drugi objekat koji se nalazi u morskoj sredini i obuhvata hidrokrilna plovila, lebdilice, podmornice, plutajuc′e objekte i fiksne ili plutajuc′e platforme; (*omissis*)

37) šteta koja je nanijeta morskoj sredini je posljedica događaja koji prouzrokuje štetu zagađivanjem ili predstavlja neposrednu prijetnju za nastanak takve štete; (*omissis*)

52) zagađivanje je neposredno ili posredno ispuštanje, potapanje ili emitovanje materija u more i vazduh, kao i pomorske nezgode koje štetno utiču ili mogu štetno da utiču na živa bic′a i morske organizme, predstavljaju opasnost po zdravlje ljudi, ometaju pomorske aktivnosti, uključujuc′u ribarstvo i druge vidove zakonitog korišc′enja mora, pogoršavaju kvalitet morske vode i smanjuju moguc′nost korišc′enja mora za rekreaciju; (*omissis*) (*omissis*)

II. ZAGAĐIVANJE SA PLOVNIH OBJEKATA
Član 4

Zabranjeno je sa plovnog objekta u vode Crne Gore: (*omissis*)

- ispuštanje balastnih voda i taloga iz balastnih tankova ako sadrže štetne materije, patogene mikroorganizme i invazivne vrste; (*omissis*)

Radnje navedene u stavu 1 ovog člana mogu se vršiti na osnovu odobrenja koje, na zahtjev zapovjednika, odnosno vlasnika plovnog objekta, izdaje organ državne uprave nadležan za poslove pomorstva (u daljem tekstu: Ministarstvo), uz saglasnost organa državne uprave nadležnog za poslove zaštite životne sredine.

Odobrenje iz stava 2 ovog člana sadrži: vrijeme, količinu i razloge ispuštanja materija, antivegetativnih sistema protiv obrastanja broda ako sadrže biocidna organska jedinjenja kalaja i namjernog potapanja, spaljivanja i zakopavanja na morskom dnu otpada ili drugih materija.

Zabrana iz stava 1 ovog člana ne odnosi se na radnje i aktivnosti koje su:

- učinjene radi sigurnosti broda ili spašavanja ljudskih života na moru;

- nastale kao posljedica oštec′enja plovnog objekta ili njegove opreme;

- nastale iz razloga sprječavanja zagađivanja i otklanjanja posljedica od zagađivanja.

(*omissis*)

27) vessel means a ship, technical vessel, floating facility, boat and all objects in the marine environment including: hydrofoil vessels, hovercrafts, submarines, floating objects and fixed and floating platforms; (*omissis*)

37) damage to the marine environment is the consequence of an occurrence which causes pollution damage or poses an immediate threat of such damage; (*omissis*)

52) pollution means direct or indirect discharge, dumping or emission of substances into the sea or into the air, including maritime incidents which result or are likely to result in a harm to living resources and marine organisms, hazards to human health, hindrances to marine activities including fishing and other legitimate uses of the sea, impairment of the quality of sea water and reduction of amenities;
(*omissis*)

II. POLLUTION FROM VESSELS
Article 4

In the waters of Montenegro, the following is prohibited: (*omissis*)

- discharge of ballast waters and sediments from ballast tanks if they contain harmful substances, pathogens and invasive species; (*omissis*)

Discharge of substances referred to in paragraph 1 of this Article may be performed at the request made by the Master or owner of a vessel and upon authorization by the competent authority for the maritime affairs (hereinafter referred to as 'the Ministry') and with the consent of the competent body responsible for environmental protection affairs.

The authorization referred to in paragraph 2 of this Article shall contain the following: date, quantity and reasons for discharging of substances, anti-fouling systems containing biocide organotin compounds and intentional dumping, incineration and burying or waste and other material on the seabed.

Prohibitions referred to in paragraph 1 of this Article shall not apply to those measures and activities which are:

- conducted for the purpose of securing the safety of a ship or saving life at sea; or

- conducted as the consequence of a damage to the vessel or her equipment; or

- conducted for the purpose of preventing pollution and eliminating its consequences.
(*omissis*)

Član 12

U slučaju zagađivanja mora sa plovnog objekta izvršic′e se uzimanje i analiza uzoraka, radi utvrđivanja vrste zagađivanja i preduzimanja mjera za otklanjanje zagađivanja i otkrivanje počinioca.

Poslove iz stava 1 ovog člana može da obavlja ovlašc′eno pravno lice koje ispunjava sljedec′e uslove:

- da je registovano za obavljanje djelatnosti iz oblasti zaštite životne sredine (uzimanje i analiza uzoraka);
- da ima stručni kadar;
- da raspolaže opremom i uređajima.

Ovlašc′ivanje pravnog lica iz stava 2 ovog člana vrši organ državne uprave nadležan za poslove zaštite životne sredine rješenjem.

Listu ovlašc′enih pravnih lica iz stava 2 ovog člana objavljuje na internet stranici organ državne uprave nadležan za poslove zaštite životne sredine.

Bliže uslove koje mora da ispunjava ovlašc′eno pravno lice iz stava 2 ovog člana i postupak ovlašc′ivanja propisuje organ državne uprave nadležan za poslove zaštite životne sredine, uz prethodno pribavljeno mišljenje organa državne uprave nadležnog za poslove zdravlja.

Član 13

Ovlašc′eno pravno lice iz člana 12 ovog zakona uzimanje i analizu uzoraka vrši po nalogu inspektora sigurnosti plovidbe (u daljem tekstu: inspektor).

Uzimanje uzoraka iz stava 1 ovog člana mora se izvršiti na način kojim se ne izaziva nepotrebno zadržavanje plovnog objekta.

Troškove uzimanja i analize uzoraka sa plovnog objekta snosi vlasnik plovnog objekta koji je izazvao zagađivanje, a ako je zagađivač nepoznat, troškove snosi Ministarstvo.

(*omissis*)

Član 15

Sprječavanje, smanjenje i otklanjanje posljedica zagađivanja mora sa plovnog objekta može da vrši pravno lice koje je registrovano za obavljanje te djelatnosti, ako ispunjava uslove u pogledu stručne i

Article 12

In case of sea pollution from a ship, sampling and analysis will be performed with the purpose to establish the type of pollution and adequate measures to eliminate the pollution and identify the responsible.

Activities referred to in paragraph 1 of this Article shall be performed by an authorized legal person which complies with the following conditions:

- it is registered for activities in the field of environmental protection (sample taking and analysis);
- it has necessary professional expertise; and
- it has adequate equipment and installations.

Authorization of legal person referred to in paragraph 2 of this Article shall be based on a decision issued by the competent authority responsible for environmental protection affairs.

The list of authorized legal persons referred to in paragraph 2 of this Article shall be published on the web page of the competent authority responsible for environmental protection affairs.

Detailed conditions which have to be complied with by the authorized legal person referred to in paragraph 2 of this Article and the procedure for the authorization shall be prescribed by the competent authority responsible for environmental protection affairs, and taking into consideration the opinion of the competent authority responsible for health affairs.

Article 13

The authorized legal person referred to in Article 12 of this Law shall perform sampling and analysis in accordance with the mandate issued by a safety of navigation inspector (hereinafter referred to as 'the inspector').

Sampling referred to in paragraph 1 of this Article shall be performed in a manner which will not cause undue delay to the vessel.

The costs of sampling and analysis shall be borne by the owner of the vessel which caused the pollution, and when the offender is unknown the costs shall be borne by the Ministry.

(*omissis*)

Article 15

Prevention, reduction and elimination of the effects of pollution from a vessel shall be performed solely by a legal person registered for

tehničke osposobljenosti.

Poslovi iz stava 1 ovog člana povjeravaju se pravnom licu u skladu sa zakonom kojim se uređuju javne nabavke.

Međusobna prava i obaveze organa uprave i pravnog lica iz stava 1 ovog člana uređuju se ugovorom, u skladu sa zakonom, koji se zaključuje na period od pet godina.

Uslovi koje mora da ispunjava pravno lice iz stava 1 ovog člana utvrđuju se propisom Ministarstva, uz saglasnost organa državne uprave nadležnog za poslove zaštite životne sredine.

(*omissis*)

IX. BALASTNE VODE

Član 40

Zapovjednik broda dužan je da, u mjeri kojom se ne ugrožava sigurnost plovidbe i zaštita morske sredine, izbjegne ili ograniči ukrcaj balastnih voda u područjima u kojima:

- postoje štetni mikroorganizmi;
- postoje fabrički ispusti;
- se vrše podvodna bagerisanja;
- postoje izrazito visoke razlike između plime i osjeke;
- postoji visoka zamućenost vode zbog rada brodskih propulzionih uređaja;
- se vrše mriještenja riba;
- dolazi do sudaranja morskih struja.

Član 41

Zapovjednik broda koji je ukrcao balastne vode dužan je da, prije uplovljavanja u vode Crne Gore, izvrši:

- zamjenu balastnih voda ili
- obradu balastnih voda ili
- iskrcaj balastnih voda u uređaje za prihvat i rukovanje ili
- zadržavanje balastnih voda na brodu.

Zamjena balastnih voda dozvoljena je na udaljenosti od najmanje 200 nautičkih milja od najbližeg kopna i dubini mora od najmanje 200 metara.

U slučajevima kada brod nije u mogućnosti da izvrši zamjenu balastnih voda na način iz stava 2 ovog člana, zamjena balastnih voda može se izvršiti na udaljenosti od najmanje 50 nautičkih milja od najbližeg kopna i na dubini mora od najmanje 200 metara.

Zamjenom iz stava 2 ovog člana mora biti

these activities complying with the requirements for professional and technical capacities.

Activities referred to in paragraph 1 of this Article shall be delegated to a legal person in accordance with the law regulating public procurements.

Mutual rights and responsibilities of the competent authority and the legal person referred to in paragraph 1 of this Article shall be regulated by a contract concluded for a five year period.

Conditions which have to be complied with by a legal person referred to in paragraph 1 of this Article shall be prescribed by a Ministry regulation and with the consent of the competent authority responsible for environmental protection affairs.

(*omissis*)

IX. BALLAST WATER

Article 40

The master of a ship shall, insofar as it does not endanger the safety of navigation and environmental protection, try to avoid or limit the uptake of ballast water in the areas where:

- the presence of harmful aquatic organisms is known,
- there are factory outfalls,
- underwater dredging is underway,
- there are extremely high differences between high and low tides,
- there are high levels of water turbidity,
- there are places of hatchery,
- sea currents collide.

Article 41

Before entering the waters of Montenegro the master of a ship which has loaded ballast water shall perform the following:

- ballast water exchange, or
- treatment of ballast water, or
- discharge of ballast water into a reception and treatment facility, or
- retain ballast water on board.

Ballast water exchange is allowed at a distance of at least 200 nautical miles from the nearest land and in water at least 200 meters in depth.

In cases when a ship is not in a position to conduct ballast water exchange in accordance with paragraph 2 of this Article, ballast water exchange shall be conducted at a distance of at least 50 nautical miles from the nearest land and in water at least 200 meters in depth.

The exchange referred to in paragraph 2 of

obuhvaćeno najmanje 95% postojećih balastnih voda na brodu.
Obradu balastnih voda iz stava 1 ovog člana propisuje Ministarstvo, uz saglasnost organa državne uprave nadležnog za poslove zaštite životne sredine.

Član 42

Zapovjednik broda nije dužan da izvrši jednu od radnji iz člana 41 ovog zakona u slučajevima kada je ugrožena sigurnost broda i života ljudi, kao i kada prijeti opasnost od zagađivanja mora štetnim materijama.
(*omissis*)

Član 44

Brod konstruisan za krcanje balastnih voda koji uplovljava u luke Crne Gore mora da ima plan upravljanja balastnim vodama.

Plan iz stava 1 ovog člana sadrži naročito podatke o:

- postupcima koji se sprovode radi sigurnosti broda i posade u vezi sa upravljanjem balastnim vodama;
- radnjama i aktivnostima koje je potrebno preduzeti u upravljanju balastnim vodama;
- postupke odlaganja taloga iz balastnih tankova u more i na kopno;
- načinu koordinacije sa nadležnim tijelima države u čijim vodama se iskrcaj balastnih voda vrši;
- načinu izvještavanja;
- licu na brodu koje je zaduženo za sprovođenje plana;
- druge podatke od značaja za upravljanje balastnim vodama.

Plan iz stava 1 ovog člana vodi se na crnogorskom i engleskom jeziku.

Član 45

Tanker od najmanje 150 BT i brod od najmanje 300 BT moraju da vode knjigu balasta.

U knjigu balasta unose se sljedeći podaci:

- ime tankera, odnosno broda;
- IMO broj,
- o bruto tonaži;
- o zastavi koju vije tanker, odnosno brod;
- o kapacitetu tankova za balastnu vodu.

Knjiga balasta vodi se na crnogorskom i engleskom jeziku.

this Article shall have an efficiency of at least 95% of the total volume of the ballast water on ship.

The treatment of ballast water referred to in paragraph 1 of this Article shall be established by the Ministry, with the consent of the competent body responsible for environmental protection affairs.

Article 42

The master of a ship is not required to comply with any of the actions referred to in Article 41 of this Law when those actions would threaten the safety of the ship, life at sea or threaten to pollute the sea with harmful substances.
(*omissis*)

Article 44

A ship constructed for the carriage of ballast water and arriving at a port in Montenegro shall have a Ballast Water Management plan.

The Plan referred to in paragraph 1 of this Article shall include the following information:

- safety procedures for the ship and the crew associated with Ballast Water Management,
- the actions and measures to be taken to implement the Ballast Water Management requirements,
- the procedures for the disposal of sediments at sea and to shore,
- the procedures for coordination with the authorities of the State into whose waters such discharge takes place,
- reporting procedure,
- designated officer on board in charge of the implementation of the plan,
- other information relevant for the ballast water management.

The plan referred to in paragraph 1 of this Article shall be written in Montenegrin and English languages.

Article 45

A tanker of 150 GT and above and a ship of 300 GT and above shall keep a ballast water record book.
Ballast water record book shall have entries of the following:

- name of tanker or ship,
- IMO number,
- gross tonnage,
- flag,
- total capacity of ballast water tanks.

Plovni objekti iz stava 1 ovog člana dužni su da količinu i porijeklo balastnih voda prijave Kapetaniji, najkasnije 48 sati prije uplovljavanja u luke Crne Gore.

Član 46

Zabranjeno je u vode Crne Gore ispuštanje balastnih voda koje sadrže mikroorganizme, invazivne vrste ili druge štetne materije.

Ako inspektor posumnja da balastne vode sadrže mikroorganizme, invazivne vrste ili druge štetne materije, narediće da se izvrši analiza uzoraka i ispitivanje balastnih voda koje se ispuštaju.

Troškove uzimanja uzoraka i ispitivanje balastnih voda iz stava 2 ovog člana snosi vlasnik broda.

Ako se utvrdi da balastne vode ne sadrže mikroorganizme, invazivne vrste ili druge štetne materije, troškove uzimanja uzoraka i ispitivanja snosi Ministarstvo.

Vrste mikroorganizama, invazivnih vrsta ili drugih štetnih materija iz stava 1 ovog člana propisuje organ državne uprave nadležan za poslove zaštite životne sredine, uz prethodno pribavljeno mišljenje organa državne uprave nadležnog za poslove zdravlja.

Član 47

Zapovjednik broda dužan je da talog koji ostaje nakon ispuštanja balastnih voda sakuplja isključivo korišćenjem mehaničkih alata i odlaže u kopnene uređaje za prihvat i rukovanje.

Član 48

Korisnik luke dužan je da svaka tri mjeseca vrši analizu stanja mora u odnosu na zagađivanje balastnim vodama na lučkom području i o tome sačinjava izvještaj.

Izvještaj iz stava 1 ovog člana dostavlja se Ministarstvu i organu državne uprave nadležnom za poslove zaštite životne sredine, u roku od dva dana od dana sačinjavanja izvještaja.

(*omissis*)

Ballast water record book shall be kept in Montenegrin and English language.

A vessel referred to in paragraph 1 of this Article shall report the quantity and the origin of ballast water to a Harbormaster's at least 48 hours prior to its arrival at a port in Montenegro.

Article 46

It is prohibited to discharge into waters of Montenegro ballast water which contains microorganisms, invasive species or other harmful substances.

If the inspector suspects that ballast water may contain microorganisms, invasive species or other harmful substances, he/she shall order the sampling and analysis of ballast water being discharged.

Costs of sampling and analysis of ship's ballast water referred to in paragraph 2 of this Article shall be borne by the owner of a ship.

If it is established that ballast water does not contain microorganisms, invasive species or other harmful substances the costs of sampling and analysis shall be borne by the Ministry.

Types of microorganisms, invasive species or other harmful substances referred to in paragraph 1 of this Article shall be established by the competent body responsible for environmental protection affairs with the previously received opinion on the matter by the competent body responsible for health affairs.

Article 47

The master of a ship shall collect the sediments which remain after ballast water discharge solely by mechanical means and shall dispose of them into reception and treatment facilities on shore.

Article 48

A port beneficiary shall conduct analysis of the sea conditions once every three months in relation to ballast water pollution in the port area and draft the related report.

The report referred to in paragraph 1 of this Article shall be submitted to the Ministry and the competent body responsible for environmental protection affairs within 2 days of the date of its final draft.

(*omissis*)

XII. PRIHVAT I RUKOVANJE OTPADOM, OTPADNIM ULJEM, OSTACIMA TERETA I TALOGOM IZ BALASTNIH TANKOVA U LUKAMA

Član 51

Korisnik luke dužan je da opremi luku uređajima za prihvat i rukovanje otpadom, otpadnim uljem, ostacima tereta i talogom iz balastnih tankova sa plovnih objekata, u skladu sa međunarodnim i domaćim propisima kojima se uređuje sprječavanje zagađivanja životne sredine s brodova, zaštita morske sredine i priobalnog područja i civilna odgovornost za štetu izazvanu zagađivanjem.

(*omissis*)

XIV. NADZOR

Član 59

Nadzor nad sprovođenjem ovog zakona i propisa donesenih na osnovu ovog zakona vrši Ministarstvo.

Član 60

Poslove inspekcijskog nadzora vrši inspektor, u skladu sa zakonom.

Član 61

Pored ovlašćenja utvrđenih Zakonom o inspekcijskom nadzoru, inspektor ima obavezu i ovlašćenje da:

- vrši pregled brodskih isprava i knjiga propisanih ovim zakonom i međunarodnim konvencijama;
- vrši pregled opreme, sredstava i uređaja na brodu i u luci koji mogu izazvati zagađivanje mora;
- naloži uzimanje uzorka iz balastnih voda; (*omissis*)
- vrši pregled upravljanja balastnim vodama; (*omissis*)
- zabrani iskrcaj balastnih voda u skladu sa članom 46 ovog zakona do završetka ispitivanja balastnih voda; (*omissis*)

(*omissis*)

XII. RECEPTION AND MANAGEMENT OF WASTE, WASTE OIL, CARGO RESIDUES AND SEDIMENTS FROM BALLAST TANKS IN PORTS

Article 51

Port beneficiary shall equip the port with facilities for the reception and handling of waste, waste oil, cargo residues and sediments from ballast tanks from vessels, in accordance with the international and domestic regulations dealing with the prevention of environmental pollution from ships, protection of marine environment and coastal area and civil liability for the damage caused by pollution.

(*omissis*)

XIV. SUPERVISION

Article 59

The supervision of implementation of this Law and regulations adopted on the basis of it shall be conducted by the Ministry.

Article 60

Inspectional controls shall be performed by inspectors in accordance with the law.

Article 61

Besides the authorizations established by the Law on inspectional control, inspectors have the responsibility and are authorized to:

- conduct inspection of ship's papers and books as provided for by this Law and international conventions,
- conduct the inspection of equipment, devices and installations on ship and in port which may cause marine pollution;
- order ballast water sampling; (*omissis*)
- conduct an inspection of ballast water management; (*omissis*)
- prohibit the discharge of ballast water in accordance with Article 46 of this Law until the completion of ballast water testing; (*omissis*)

(*omissis*)

XV. KAZNENE ODREDBE
Član 62

Novčanom kaznom od 1.000 eura do 40.000 eura kazniće se za prekršaj pravno lice, ako: (*omissis*)

6) ispusti balastne vode ili talog iz balastnih tankova ako sadrže štetne materije i patogene mikroorganizme i invazivne vrste (član 4 stav 1 alineja 6); (*omissis*)

50) zapovjednik broda koji je ukrcao balastne vode nije, prije uplovljavanja u vode Crne Gore, izvršio zamjenu balastnih voda ili obradu balastnih voda, iskrcaj balastnih voda u uređaje za prihvat i rukovanje ili zadržavanje balastnih voda na brodu na način iz člana 41 ovog zakona (član 41);

51) brod koji je konstruisan za krcanje balastnih voda koji uplovljava u luke Crne Gore nema plan upravljanja balastnim vodama (član 44 stav 1);

52) tanker od najmanje 150 BT, kao i brod od najmanje 300 BT ne vode knjigu balasta (član 45 stav 1);

53) plovni objekti iz člana 45 stav 1 ovog zakona ne prijave Kapetaniji količinu i porijeklo balastnih voda, najkasnije 48 sati prije uplovljavanja u luke Crne Gore (član 45 stav 4);

54) u vode Crne Gore ispušta balastne vode koje sadrže mikroorganizme, invazivne vrste ili druge štetne materije (član 46 stav 1);

55) zapovjednik broda talog koji ostane nakon ispuštanja balastnih voda ne sakuplja i odlaže na način iz člana 47 ovog zakona;

56) korisnik luke svaka tri mjeseca ne vrši analizu stanja mora u odnosu na zagađivanje balastnim vodama na lučkom području i o tome ne dostavi izvještaj Ministarstvu i organu državne uprave nadležnom za poslove zaštite životne sredine u roku od dva dana (član 48 st. 1 i 2); (*omissis*)

60) korisnik luke ne opremi luku uređajima za prihvat i rukovanje otpadom, otpadnim uljem, ostacima tereta i talogom iz balastnih tankova sa plovnih objekata (član 51); (*omissis*)

Za prekršaj iz stava 1 ovog člana kazniće se i odgovorno lice u pravnom licu novčanom kaznom od 500 eura do 4.000 eura.

Za prekršaj iz stava 1 ovog člana kazniće se preduzetnik novčanom kaznom od 1.000 eura do 6.000 eura.

XV. PENALTY CLAUSES
Article 62

A legal person shall be fined with a pecuniary penalty ranging from 1.000 to 40.000 euros for the following: (*omissis*)

6) discharge of ballast water or sediments from ballast tanks if they contain harmful substances, pathogenic microorganisms and invasive species (Article 4, paragraph 1, item 6); (*omissis*)

50) before entering the waters of Montenegro, the master of a ship which has loaded ballast water didn't perform ballast water exchange or treatment of ballast water or discharged ballast water into a reception and treatment facility, or retained ballast water on board in a manner prescribed in the Article 41 of this Law

51) a ship constructed for the carriage of ballast water and arriving at a port in Montenegro doesn't have a Ballast Water Management plan (Article 44, paragraph 1);

52) a tanker of 150 GT and above and a ship of 300 GT and above doesn't have a Ballast Water Record book (Article 45, paragraph 1);

53) a vessel referred to in Article 45, paragraph 1 of this Law fails to report the quantity and the origin of ballast water to the Harbourmaster's at least 48 hours prior to its arrival at a port in Montenegro (Article 45, paragraph 4);

54) discharges into waters of Montenegro ballast water which contains microorganisms, invasive species or other harmful substances (Article 46, paragraph 1);

55) the master of a ship doesn't collect the sediments which remain after ballast water discharge in a manner prescribed in Article 47 of this Law;

56) a port beneficiary doesn't conduct analysis of the sea condition once every three months in relation to ballast water pollution in the port area and doesn't submit a report on it to the Ministry and the competent body responsible for environmental protection affairs within 2 days (Article 48, paragraph 1 and 2); (*omissis*)

60) a port beneficiary fails to equip the port with facilities for the reception and handling of waste, waste oil, cargo residues and sediments from ballast tanks from vessels (Article 51); (*omissis*)

For the penalty referred to in paragraph 1 of this Article the responsible person in a legal person shall be fined with a pecuniary penalty ranging from 500 to 4.000 euros.

For the penalty referred to in paragraph 1 of

Za prekršaj iz stava 1 ovog člana kazniće se fizičko lice novčanom kaznom od 500 eura do 2.000 eura.
(*omissis*)

this Article a contractor shall be fined with a pecuniary penalty ranging from 1.000 to 6.000 euros.

For the penalty referred to in paragraph 1 of this Article a natural person shall be fined with a pecuniary penalty ranging from 500 to 2.000 euros.
(*omissis*)

ADDENDUM: LEGAL TEXTS ON PORTS INSPECTIONS

Paris Memorandum of Understanding on Port State Control

PARIS MEMORANDUM OF UNDERSTANDING ON PORT STATE CONTROL[1]

The Maritime Authorities of Belgium, Bulgaria, Canada, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany (Federal Republic of), Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovenia, Spain, Sweden, United Kingdom of Great Britain and Northern Ireland,
hereinafter referred to as 'the Authorities'
Recalling the Final Declaration adopted on 2 December 1980 by the Regional European Conference on Maritime Safety which underlined the need to increase maritime safety and the protection of the marine environment and the importance of improving living and working conditions on board ship;
Noting with appreciation the progress achieved in these fields by the International Maritime Organization and the International Labour Organization;
Noting also the contribution of the European Union towards meeting the above mentioned objectives;
Mindful that the principal responsibility for the effective application of standards laid down in international instruments rests upon the authorities of the State whose flag a ship is entitled to fly;
Recognizing nevertheless that effective action by port States is required to prevent the operation of substandard ships;
Recognizing also the need to avoid distorting competition between ports;
Convinced of the necessity, for these purposes, of an improved and harmonized system of port State control and of strengthening co-operation and the exchange of information;
have reached the following understanding:

Section 1 - Commitments

1.1. Each Authority will give effect to the provisions of the present Memorandum and the Annexes thereto.

1.2. Each Authority will maintain an effective system of port State control with a view to ensuring that, without discrimination as to flag, foreign merchant ships calling at a port of its State, or anchored off such a port, comply with the standards laid down in the relevant instruments listed in Section 2.

1.3. Each Authority will carry out an inspection on every foreign merchant ship of Priority I calling at one of its ports or anchorages, subject to the flexibility and regional commitment as described in Annex 11. Each Authority will carry out a total number of inspections of foreign merchant ships of Priority I and Priority II which corresponds at least to its annual inspection commitment determined in accordance with Annex 11.

Authorities should refrain from selecting Priority II periodic inspections when these are not required in order to meet their annual commitment.

1.4. Each Authority will consult, cooperate and exchange information with the other Authorities in order to further the aims of the Memorandum.

1.5. Each Authority, or any other body, as the case may be, will establish an appropriate procedure for pilot services, including those engaged on ships bound for a port or in transit within its State, and port authorities to immediately inform the Authority of the port State or the coastal State, as appropriate, whenever they learn in the course of their normal duties that there are apparent anomalies which may prejudice the safety of the ship, or which may pose a threat of harm to the marine environment.

1.6. In fulfilling their commitments the Authorities will carry out inspections of the type specified in Annex 9.

1.7. Nothing in the Memorandum will be construed as restricting the powers of the Authorities to take measures within its jurisdiction in respect of any matter to which the relevant instruments relate.

[1] Including 39th Amendment, adopted 27 May 2016 (effective date: 1 July 2016)

Section 2 - Relevant instruments

2.1. For the purposes of the Memorandum "relevant instruments" are the following:

.1 the International Convention on Load Lines, 1966 (LOAD LINES 66);

.2 the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (LL PROT 88);

.3 the International Convention for the Safety of Life at Sea, 1974 (SOLAS);

.4 the Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974 (SOLAS PROT 78);

.5 the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974 (SOLAS PROT 88);

.6 International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and as further amended by the Protocol of 1997 (MARPOL);

.7 the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 78);

.8 the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 72);

.9 the International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 69);

.10 the Merchant Shipping (Minimum Standards) Convention, 1976 (ILO Convention No. 147) (ILO 147);

.11 the Protocol of 1996 to the Merchant Shipping (Minimum Standards) Convention, 1976 (ILO Convention No. 147) (ILO P147)

.12 the Maritime Labour Convention, 2006 (MLC 2006);

.13 the International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC1969);

.14 Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC PROT 1992);

.15 International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001 (AFS 2001);

.16 the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001;

.17 the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM).

2.2. With respect to the ILO conventions (including MLC, 2006) in Section 2.1, each Authority will apply the procedures referred to in Annex 2.

2.3. Each Authority will apply those relevant instruments which are in force and to which its State is a Party. In the case of amendments to a relevant instrument each Authority will apply those amendments which are in force and which its State has accepted. An instrument so amended will then be deemed to be the 'relevant instrument' for that Authority.

2.4. In applying a relevant instrument, the Authorities will ensure that no more favourable treatment is given to ships of non-Parties and apply the procedures specified in Annex 1.

In the case of ships below convention size the Authorities will apply the procedures in Annex 1.

Section 3 - Reporting, Ship Risk Profile, Selection, Inspection and Detention

3.1. Each ship has to follow the reporting requirements according to Annex 12.

3.2. Each ship in the information system will be attributed a ship risk profile, in accordance with Annex 7, which will determine its priority for inspection, the interval between its inspections and the scope of the inspection. In selecting ships for inspection the Authorities will determine their priority from the selection scheme indicated in Annex 8.

3.3. Inspections will be carried out by properly qualified and trained persons authorized for that purpose by the Authority concerned and acting under its responsibility, having regard in particular to Annex

6. When the required professional expertise cannot be provided by the Authority, the Port State Control Officer of that Authority may be assisted by any person with the required expertise. Port State Control Officers and the persons assisting them will have no commercial interest, either in the port of inspection or in the ships inspected, nor will Port State Control Officers be employed by or undertake work on behalf of non-governmental organizations which issue statutory and classification certificates or which carry out the surveys necessary for the issue of those certificates to ships. Each Port State Control Officer will carry a personal document in the form of an identity card issued by his Authority in accordance with the national legislation, indicating that the Port State Control Officer is authorized to carry out inspections.

3.4. Each Authority will endeavour to secure the rectification of all deficiencies detected. On the condition that all possible efforts have been made to rectify all deficiencies, other than those which are clearly hazardous to safety, health or the environment, the ship may be allowed to proceed to a port where any such deficiencies can be rectified. In the case of deficiencies which are clearly hazardous to safety, health or the environment, the Authority will, except as provided in 3.8, ensure that the hazard is removed before the ship is allowed to proceed to sea. For this purpose appropriate action will be taken, which may include detention or a formal prohibition of a ship to continue an operation due to established deficiencies which, individually or together, would render the continued operation hazardous. In deciding on the appropriate action to be taken Port State Control

Officers will be guided by a PSCC Instruction.

3.5. Where the ground for a detention is the result of accidental damage suffered on the ship's voyage to a port or during cargo operations, no detention order will be issued, provided that:

.1 due account has been given to the requirements contained in Regulation I/11(c) of SOLAS regarding notification to the flag Administration, the nominated surveyor or the recognized organization responsible for issuing the relevant certificate;
.2 prior to entering a port or immediately after a damage has occurred, the master or ship owner has submitted to the port State control authority details on the circumstances of the accident and the damage suffered and information about the required notification of the flag Administration;
.3 appropriate remedial action, to the satisfaction of the Authority, is being taken by the ship, and
.4 the Authority has ensured, having been notified of the completion of the remedial action, that deficiencies which were clearly hazardous to safety, health or the environment have been addressed to the satisfaction of the Authority.

3.6. In exceptional circumstances where, all applicable statutory certificates as listed in a PSCC Instruction are missing, expired or invalid, or as a result of a more detailed inspection, the overall condition of a ship and its equipment, also taking the seafarers and their living and working conditions into account, is found to be obviously sub-standard, the Authority may suspend an inspection. The suspension of the inspection may continue until the responsible parties have taken the steps necessary to ensure that the ship complies with the requirements of the relevant instruments. Prior to suspending an inspection, the Authority must have recorded detainable deficiencies in several areas as set out in a PSCC Instruction. The notification of the detention to the responsible parties will state that the inspection is suspended until the Authority has been informed that the ship complies with all relevant requirements.

3.7. In the case of a detention, the Authority will immediately notify the flag Administration[2]) in writing and include the report of inspection. Likewise the recognized organization that has issued the relevant certificates on behalf of the flag Administration will be notified, where appropriate. The parties above will also be notified in writing of the release of detention.

In the case of a detention related to a non-compliance with the MLC, 2006, the Authority will also immediately notify the appropriate shipowners' and seafarers' organizations in the port State in which the

[2] Refer to MSC/Circ, 781 and MEPC 6/Circ 2 "National contact points of Members for safety and pollution prevention" (annexes 1 and 2). When a valid contact point is not available the nearest diplomatic representative should be informed.

inspection was carried out.

3.8. Where deficiencies which caused a detention as referred to in 3.4 cannot be remedied in the port of inspection, the Authority may allow the ship concerned to proceed to the nearest appropriate repair yard available (or in case of detainable deficiencies in accordance with MLC, 2006, to the port where the Rectification Action Plan is to be implemented) in accordance with a PSCC Instruction.
Where the decision to send a ship to a repair yard is due to a lack of compliance with the IMO Resolution A.1049(27), either with respect to ship's documentation or with respect to ship's structural failures and deficiencies, the Authority may require that the necessary thickness measurements are carried out in the port of detention as set out in PSCC Instructions before the ship is allowed to sail.

If the vessel is detained because it is not equipped with a functioning voyage data recorder system, when its use is compulsory, and this deficiency cannot be readily rectified in the port of detention, the authority may allow the ship to proceed to the appropriate repair yard or port nearest to the port of the detention where it shall be readily rectified or require that the deficiency is rectified within a maximum period of 30 days.

3.9. The provisions of 3.7 and 3.8 are without prejudice to the requirements of relevant instruments or procedures established by international organizations concerning notification and reporting procedures related to port State control.

3.10. The Authorities will ensure that, on the conclusion of an inspection, the master of the ship is provided with a report of inspection, giving the results of the inspection including references to the relevant instruments and details of any action to be taken.

3.11. Should any inspection referred to in Section 1.3 confirm or reveal deficiencies in relation to the requirements of a relevant instrument warranting the detention of a ship, all costs relating to the inspections in any normal accounting period should be covered by the ship owner or the operator or by his representative in the port State.

All costs relating to inspections carried out by the Authority under the provisions of Section 4 will be charged to the owner or the operator of the ship.

The detention will not be lifted until full payment has been made or a sufficient guarantee has been given for the reimbursement of the costs subject to national law.

3.12. The owner or the operator of a ship or his representative in the State concerned will have a right of appeal against a detention decision or refusal of access taken by the Authority of that State. An appeal will not cause the detention or refusal of access to be suspended.

The Authority will properly inform the master of a ship of the right of appeal.

3.13. When exercising control under the Memorandum, the Authorities will make all possible efforts to avoid unduly detaining or delaying a ship. Nothing in the Memorandum affects rights created by provisions of relevant instruments relating to compensation for undue detention or delay. In any instance of alleged undue detention or delay the burden of proof lies with the owner or operator of the ship.

Section 4 – Banning

4.1. Refusal of access of ships following multiple detentions.

.1 Each Authority is recommended to ensure that a foreign merchant ship is refused access to its ports and anchorages if it:

- flies the flag of a State appearing in the grey list as published in the annual report of the MoU and has been detained or has been issued with a prevention of operation order under the system of mandatory surveys for the safe operation of regular ro-ro ferry and highspeed passenger craft services more than twice in the course of the preceding 24 months in a port or anchorage within the region of the Memorandum, or;
- flies the flag of a State appearing in the black list as published in the annual report of the MoU and has been detained or has been issued with a prevention of operation order under the sys-

tem of mandatory surveys for the safe operation of regular ro-ro ferry and highspeed passenger craft services more than twice in the course of the preceding 36 months in a port or anchorage within the region of the Memorandum,

.2 The refusal of access following multiple detentions will become applicable as soon as the ship leaves the port or anchorage.

.3 The refusal of access order shall be lifted after a period of three months has passed from the date of issue of the order and when the conditions in a PSCC Instruction are met.

If the ship is subject to a second refusal of access, the period shall be 12 months

.4 Any subsequent detention in a port or anchorage shall result in the ship being refused access to any port or anchorage. This third refusal of access order may be lifted after a period of 24 months has passed from the issue of the order and only if:

- the ship flies the flag of a State whose detention rate falls neither into the black list nor the grey list,
- the statutory and classification certificates of the ship are issued by a organization or organizations which are recognized by one or more of the Paris MoU Member States as listed in Annex 7,
- the ship is managed by a company with a high performance,
- and the conditions set in a PSCC Instruction are met.

Any ship not meeting the criteria as specified above after a period of 24 months has passed from the issue of the order, shall be permanently refused access to any port and anchorage.

.5 Any subsequent detention in a port or anchorage after the third refusal of access shall result in the ship being permanently refused access to any port or anchorage.

.6 Before denying entry, the Authority may request consultations with the Administration of the ship concerned.

4.2. Refusal of access of ship following other occurrences

.1 a foreign ship referred to in Section 3.4 and Section 3.8 which proceeds to sea without complying with the conditions determined by the Authority in the port of inspection; or

.2 a foreign ship referred to in Section 3.8 which refuses to comply with the applicable requirements of the relevant instruments by not calling into the indicated repair yard.

4.3. For compliance of 4.1 and 4.2 each authority will ensure that the procedure set in a PSCC Instruction has been adhered to.

4.4. Notwithstanding the provisions of 4.1 and 4.2, access to a specific port may be permitted by the relevant authority of that port State in the event of force majeure or overriding safety considerations, or to reduce or minimize the risk of pollution, provided that adequate measures to the satisfaction of the authority of such State have been implemented by the owner, the operator or the master of the ship to ensure safe entry.

Section 5 - Provision of information

5.1. Each Authority will report on its inspections under the Memorandum and their results, in accordance with the procedures specified in Annex 3.

5.2. The Secretariat on behalf of Paris MoU Member States will take the necessary measures in order to ensure that information listed in Annex 4 is published at the intervals prescribed therein subject for compliance with data access policy agreed by the Committee. Information provided in accordance with 5.1 may be made available for publication in printed form or by electronic means in order to assist Authorities with the publications mentioned in Annex 4 as well as for other purposes in accordance with decisions of the Committee mentioned in Section 6.

5.3. The Secretariat, mentioned in Section 7.4 may facilitate the publication of data in any electronic or printed format derived unaltered from the information system mentioned in Annex 3.

5.4. When inspection or detention data contain information concerning private persons the Authorities undertake to ensure protection of the privacy of those persons in accordance with applicable laws and regulations. This protection shall however not prevent the publication of the company of ships inspected or publication of the names of charterers involved.

Section 6 - Operational violations

The Authorities will upon the request of another Authority, endeavour to secure evidence relating to suspected violations of the requirements on operational matters of Rule 10 of COLREG 72 and MARPOL. In the case of suspected violations involving the discharge of harmful substances, an Authority will, upon the request of another Authority, visit in port the ship suspected of such a violation in order to obtain information and where appropriate to take a sample of any alleged pollutant. Procedures for investigations into contravention of discharge provisions are listed in a PSCC Instruction.

Section 7 - Organization

7.1. A Committee will be established, composed of a representative of each of the Authorities and of the Commission of the European Communities. An advisor from each of the International Governmental Organizations, Observers and Associates will be invited to participate in the work of the Committee and any other meetings.

7.2. The Committee will meet once a year and at such other times as it may decide.

7.3. The Committee will:

.1 carry out the specific tasks assigned to it under the Memorandum;
.2 promote by all means necessary, including seminars for Port State Control Officers, the harmonization of procedures and practices relating to the inspection, rectification, detention, banning and the application of Section 2.4;
.3 develop and review guidelines and procedures for carrying out inspections under the Memorandum;
.4 develop and review procedures for the exchange of information;
.5 keep under review other matters relating to the operation and the effectiveness of the Memorandum;
.6 elect the chairman and vice-chairman of the Port State Control Committee from the Authorities;
.7 establish a MoU Advisory Board to assist the Port State Control Committee in focusing on key issues, and in particular to direct the MoU Secretariat between Port State Control Committee meetings;
.8 develop and approve PSCC Instructions.

7.4. A secretariat provided by the Netherlands' Ministry of Infrastructure and the Environment will be set up and will have its office in The Hague.

7.5. The secretariat, acting under the guidance of the Committee and within the limits of the resources made available to it, will:

.1 prepare meetings, circulate papers and provide such assistance as may be required to enable the Committee to carry out its functions;
.2 facilitate the exchange of information, carry out the procedures outlined in Annex 3 and 4 and prepare reports as may be necessary for the purposes of the Memorandum;
.3 carry out such other work as may be necessary to ensure the effective operation of the Memorandum.

Section 8 - Amendments

8.1. Any Authority may propose amendments to the Memorandum.

8.2. In the case of proposed amendments to sections of the Memorandum the following procedure will apply:

.1 the proposed amendment will be submitted through the secretariat for consideration by the Committee;

.2 amendments will be adopted by a two-thirds majority of the representatives of the Authorities present and voting in the Committee. If so adopted an amendment will be communicated by the secretariat to the Authorities for acceptance;

.3 an amendment will be deemed to have been accepted either at the end of a period of six months after adoption by the representatives of the Authorities in the Committee or at the end of any different period determined unanimously by the representatives of the Authorities in the Committee at the time of adoption, unless within the relevant period an objection is communicated to the secretariat by an Authority;

.4 an amendment will take effect 60 days after it has been accepted or at the end of any different period determined unanimously by the representatives of the Authorities in the Committee.

8.3. In the case of proposed amendments to Annexes of the Memorandum the following procedure will apply:

.1 the proposed amendment will be submitted through the secretariat for consideration by the Authorities;

.2 the amendment will be deemed to have been accepted at the end of a period of three months from the date on which it has been communicated by the secretariat unless an Authority requests in writing that the amendment should be considered by the Committee. In the latter case the procedure specified in 8.2 will apply;

.3 the amendment will take effect 60 days after it has been accepted or at the end of any different period determined unanimously by the Authorities.

Section 9 - Administrative Provisions

9.1. The Memorandum is without prejudice to rights and obligations under any international Agreement or relevant national legislation.

9.2. A Maritime Authority of a European coastal State and a coastal State of the North Atlantic basin from North America to Europe, which complies with the criteria specified in Annex 5, may adhere to the Memorandum with the consent of all Authorities participating in the Memorandum.

9.3. When the Memorandum takes effect, it will supersede the 'Memorandum of Understanding between Certain Maritime Authorities on the Maintenance of Standards on Merchant Ships', signed at The Hague on 2 March 1978.

9.4. The Memorandum will take effect on 1 July 1982.

9.5. The English and French versions of the text of the Memorandum are equally authentic.

Signed at Paris in the English and French languages, this twenty-sixth day of January one thousand nine hundred and eighty-two.

***

ANNEXES TO MEMORANDUM

ANNEX 1 - Ships of non-Parties and below convention size

1. Ships of non-Parties

Ships entitled to fly the flag of a State which is not a Party to a relevant instrument and thus not provided with certificates representing *prima facie* evidence of satisfactory conditions on board, or manned with crew members who do not hold valid STCW certificates, calling at a Paris MoU port of a member State which is Party to that relevant instrument, will receive a more detailed or, as appropriate, expanded inspection. In making such an inspection the Port State Control Officer will follow the same procedures as provided for ships to which the relevant instruments are applicable.

If the ship or the crew has some alternative form of certification, the Port State Control Officer, in making this inspection, may take the form and content of this documentation into account. The conditions of such a ship and its equipment and the certification of the crew and the flag Administration's minimum manning standard must be compatible with the aims of the provisions of the relevant instruments; otherwise the ship must be subject to such restrictions as are necessary to obtain a comparable level of safety and protection of the marine environment.

2. Ships below convention size.

2.1 To the extent a relevant instrument is not applicable to a ship below convention size, the Port State Control Officer's task will be to assess whether the ship is of an acceptable standard in regard to safety, health or the environment. In making that assessment, the Port State Control Officer will take due account of such factors as the length and nature of the intended voyage or service, the size and type of the ship, the equipment provided and the nature of the cargo.

2.2 In the exercise of his functions the Port State Control Officer will be guided by any certificates and other documents issued by or on behalf of the flag State Administration. The Port State Control Officer will, in the light of such certificates and documents and in his general impression of the ship, use his professional judgement in deciding whether and in what respects the ship will be further inspected.

When carrying out a further inspection the Port State Control Officer will, to the extent necessary, pay attention to the items listed in 3 of this Annex. The list is not considered exhaustive but is intended to give an exemplification of relevant items.

2.3 Items of general importance

2.3.1 Items related to the conditions of assignment of load lines:

.1 weather tight (or watertight as the case may be) integrity of exposed decks;

.2 hatches and closing appliances;
.3 weather tight closures to openings in superstructures;
.4 freeing arrangements;
.5 side outlets;
.6 ventilators and air pipes;
.7 stability information.

2.3.2 Other items related to the safety of life at sea:
.1 life saving appliances;
.2 fire fighting appliances;
.3 general structural conditions (i.e. hull, deck, hatch covers, etc.);
.4 main machinery and electrical installations;
.5 navigational equipment including radio installations.

2.3.3 Items related to the prevention of pollution from ships:
.1 means for the control of discharge of oil and oily mixtures e.g. oily water separating or filtering equipment or other equivalent means (tank(s) for retaining oil, oily mixtures, oil residues);
.2 means for the disposal of oil, oily mixtures or oil residues;
.3 presence of oil in the engine room bilges;
.4 means for the collection, storage and disposal of garbage.

2.4 In the case of deficiencies which are considered hazardous to safety, health or the environment the Port State Control Officer will take such action, which may include detention as may be necessary, having regard to the factors mentioned in 2.1 of this Annex, to ensure that the deficiency is rectified or that the ship, if allowed to proceed to another port, does not present a clear hazard to safety, health or the environment.

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ANNEX 2 - Maritime Labour Convention, 2006 (MLC 2006) or Merchant Shipping (Minimum Standards) Convention, 1976 (ILO 147) and ILO 147 Protocol, 1996, if applicable.

1. Maritime Labour Convention, 2006 (MLC 2006), if applicable.

1.1 Inspection regarding certificates of competency is dealt with in a PSCC Instruction. In the exercise of control of the MLC, 2006, the Port State Control Officer (PSCO) will decide, on the basis of the clear grounds listed in Annex 9 and his/her professional judgement, whether the ship will receive a more detailed inspection. All complaints not manifestly unfounded regarding conditions on board will be investigated thoroughly and action taken as deemed necessary. The PSCO will also use his/her professional judgement to determine whether the conditions on board give rise to a hazard to the safety or health of the seafarers which necessitates the rectification of conditions and may, if necessary, detain the ship until appropriate corrective action is taken. Reporting procedures for detentions are provided in Annex 4.

Implementation of PSC procedures which are specific to MLC, 2006, are set out in a PSCC Instruction.

2. Merchant Shipping (Minimum Standards) Convention, 1976 (ILO 147) and ILO 147 Protocol, 1996, if applicable.

2.1 Inspections on board ships under ILO 147 and ILO Protocol 1996 will relate to:
.1 the Minimum Age Convention, 1973 (No. 138); or the Minimum Age (Sea) Convention (Revised),1936 (No. 58); or the Minimum Age (Sea) Convention, 1920 (No. 7);
.2 the Medical Examination (Seafarers) Convention, 1946 (No. 73);
.3 the Prevention of Accidents (Seafarers) Convention, 1970 (No. 134) (Articles 4 and 7);
.4 the Accommodation of Crews Convention (Revised), 1949 (No. 92);
.5 the Food and Catering (Ships' Crews) Convention, 1946 (No. 68) (Article 5);
.6 the Accommodation and Crews (Supplementary Provisions) Convention, 1970 (No. 133);
.7 the Seafarers' Hours of Work and the Manning of Ships Convention, 1996 (No. 180);

.8 the Officers' Competency Certificates Convention, 1936 (No. 53) (Articles 3 and 4).

Inspection regarding certificates of competency is dealt with in a PSCC Instruction. In the exercise of control of the conventions listed in .1 to .7 above, the Port State Control Officer will decide, on the basis of the clear grounds listed in Annex 9 and his professional judgement, whether the ship will receive a more detailed inspection. All complaints regarding conditions on board will be investigated thoroughly and action taken as deemed necessary. He will also use his professional judgement to determine whether the conditions on board give rise to a hazard to the safety or health of the seafarers which necessitates the rectification of conditions and may, if necessary, detain the ship until appropriate corrective action is taken. Reporting procedures for detentions are provided in Annex 4.

2.2 The conventions relevant in the framework of the provisions of 2.3 of this Annex are:

.1 the Seamen's Articles of Agreement Convention, 1926 (No. 22);

.2 the Repatriation of Seamen Convention, 1926 (No. 23);

.3 the Shipowners' Liability (Sick and Injured Seamen) Convention, 1936 (No.55); or the Sickness Insurance (Sea) Convention, 1936 (No. 56); or the Medical Care and Sickness Benefits Convention, 1969 (No. 130);

.4 the Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87);

.5 the Right to Organise and Collective Bargaining Convention, 1949 (No. 98);

.6 the Seafarers' Identity Documents Convention, 1958 (No. 108);

.7 the Workers' Representatives Convention, 1971 (No. 135);

.8 the Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164);

.9 the Repatriation of Seafarers Convention (Revised), 1987, (No. 166).

2.3 If the Port State Control Officer receives a report, notification or complaint to the effect that the standards laid down in the conventions listed in 2.2 of this Annex are not met, the matter will be reported by the Authority, if possible with evidence, to the flag Administration for further action, with a copy to the ILO.

2.4 Those parts of the ILO publication "Inspection of Labour Conditions on board Ship: Guide-lines for procedure" which deal with:

.1 control procedures for national flag ships;

.2 vocational training;

.3 officers' certificates of competency (regulated under STCW 78);

.4 hours of work and manning (regulated under ILO 180/STCW 78);

are not considered as relevant provisions for the inspection of ships but as information to port State control officers only.

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ANNEX 3 - Information System on Inspections

1. To assist Authorities in their selection of foreign flag ships to be inspected in their ports it is necessary to have at the disposal of Authorities up-to-date information on particulars, calls and inspections of an individual foreign flag ship in the region of the Memorandum.

2. The information system manager, as defined in the agreement, will manage the Information System in accordance with an agreement adopted by Committee. This agreement will contain all the details on standardized procedures, information exchange, data transmission, all information in the system and other relevant matters.

3. The information system will include the following functionalities:

- Incorporate PSC inspection and port call data of Member States;
- Provide data on the ship risk profile and inspection priority;
- Calculate the inspection commitments for each Member State;

- Produce data for the calculation of the white as well as the grey and black list of flag States and the performance table of the Recognized Organizations;
- Calculate the performance of companies;
- Identify the items in risk areas to be checked at each inspection;
- Provide batch transfer (in and out) of PSC inspection and port call data to and from a Member State.

4. For that purpose the Authorities undertake to provide the information system manager, by means of computerized data transmission, with information on ships inspected in the national ports. The insertion of information into the inspection files will be realized by means of direct, computerized input on a daily basis.

5. For the purpose of exchanging rapid information, the information system will embrace a communication facility which allows for a direct, computerized exchange of messages between individual Authorities.

6. The information as in 4 and 5 above will be handled in a standardized form and in accordance with standardized procedures as set out in the guide for users of the information system developed by the information system manager and adopted by the Committee.

7. In handling the information the information system manager will not amend any data provided by the Authorities, except as provided for in standardized procedures ensuring the consistency of the use of certain action taken codes. Otherwise the information system manager will make amendments to data only on a specific written request of the originating Authority.

8. The information system manager will organize the processing of information as in paragraph 4 above so as to ensure that inspection data is easily accessible both for purposes of consultation and updating in accordance with procedures as set out in the guide for users of the information system provided by the information system manager as adopted by the Committee.

9. Information for administrative purpose, such as statistical information, will be provided by the Secretariat under the guidance of the Committee. This will be based on data provided by the information system manager.

10. The information system indicated in the foregoing paragraphs will be implemented as long as the Memorandum takes effect. The information system will be monitored and continuously improved.

11. With the consent of the Authority, the information system manager will, on behalf of that Authority, submit data as agreed by the Committee to the International Maritime Organization in accordance with Regulation I/19 of SOLAS, Article 11 of MARPOL, Article 21 of LOADLINES 66 and Article X of STCW 78.

12. With the consent of the Authority, the information system manager will, on behalf of that Authority, submit data as agreed by the Committee to the International Labour Organization in accordance with Standard A5.2.1 or Article 4 of ILO 147 if applicable.

13. With the consent of the Committee the secretariat may conclude data exchange contracts with other organisations. Upon conclusion of the contract and a technical feasibility study the information system manager will, on behalf of the Paris MoU exchange data to the other organisations.

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ANNEX 4 - Publication of Information Related to Detentions and Inspections
(as referred to in Section 5.2 of the Memorandum)

1. The PMoU website provides a point of access for the public to ship related information.

2. Information on ships detained will include the following and should be published at least every month:
a) name of the ship;

b) IMO identification number;
c) type of ship;
d) gross tonnage;
e) year of construction as determined on the basis of the date indicated in the ship's safety certificates;
f) name and address of the company of the ship;
g) in the case of ships carrying liquid or solid cargoes in bulk, the name and address of the charterer responsible for the selection of the vessel and the type of charter;
h) flag State;
i) the classification society or classification societies, where relevant, which has/have issued to this ship the class certificates including the date of issue and expiry, if any;
j) the recognized organization or organizations and/or any other party which has/have issued to this ship certificates in accordance with the applicable conventions on behalf of the flag Administration, stating the certificates delivered including the date of issue and expiry;
k) port and date of the last intermediate or annual survey for the certificates in point i) and j) above and the name of the authority or organization which carried out the survey;
l) date, country, port of detention;
m) number of detentions during the previous 36 months;
n) date when the detention was lifted;
o) duration of detention, in days;
p) the reasons for detention, in clear and explicit terms;
q) indication, where relevant, of whether the recognized organization that carried out the survey has a responsibility in relation to the deficiencies which, alone or in combination, led to detention;
r) description of the measures taken in the case of a ship which has been allowed to proceed to the nearest appropriate repair yard;
s) if the ship has been refused access to any port or anchorage within the Paris MoU, the reasons for the measure in clear and explicit terms.

3. Information concerning ships inspected will include the following:
a) name of the ship;
b) IMO identification number;
c) type of ship;
d) gross tonnage;
e) year of construction as determined on the basis of the date indicated in the ship's safety certificates;
f) name and address of the company of the ship;
g) in the case of ships carrying liquid or solid cargoes in bulk, the name and address of the charterer responsible for the selection of the vessel and the type of charter;
h) flag State;
i) the classification society or classification societies, where relevant, which has/have issued to this ship the class certificates including the date of issue and expiry, if any;
j) the recognized organization or organizations and/or any other party which has/have issued to this ship certificates in accordance with the applicable conventions on behalf of the flag Administration, stating the certificates delivered including the date of issue and expiry;
k) port and date of the last intermediate or annual survey for the certificates in point i) and j) above and the name of the authority or organization which carried out the survey;
l) date, country, port of inspection.

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ANNEX 5 - Qualitative Criteria for Adherence to the Memorandum

A Maritime Authority of a State, meeting the geographical criterion specified in 9.2 of the Memorandum, may adhere as a full member, provided that all of the following qualitative criteria have been met:

1. such Maritime Authority will explicitly subscribe to the commitments under the Memorandum, with

a view to contributing to the common endeavour to eliminate the operation of sub-standard ships;

2. such Maritime Authority will have ratified all relevant instruments in force, before adherence shall be accomplished;

3. such Maritime Authority will have sufficient capacity, logistically and substantially, to appropriately enforce compliance with international maritime standards regarding maritime safety, pollution prevention and living and working conditions on board with regard to ships entitled to fly its flag, which will include the employment of properly qualified inspectors acting under the responsibility of its Administration, to be demonstrated to the satisfaction of the Committee referred to in 7.1 of the Memorandum;

4. such Maritime Authority will have sufficient capacity, logistically and substantially, to comply in full with all provisions and activities specified in the Memorandum in order to enhance its commitments, which will include the employment of properly qualified Port State Control Officers acting under the responsibility of its Administration, to be demonstrated to the satisfaction of the Committee referred to in 7.1 of the Memorandum;

5. a Maritime Authority, whose flag has appeared in the list of detentions exceeding the average detention percentage, as published in the annual report in any of three years immediately preceding its application for full membership, cannot be accepted as a full member of the Memorandum;

6. such Maritime Authority will, as of its effective date of membership, establish a connection to the information system referred to in Annex 3;

7. such Maritime Authority will sign a financial agreement for paying its share in the operating cost of the Memorandum and will, as of its effective date, pay its financial contribution to the budget as approved by the Committee referred to in 7.1 of the Memorandum.

Assessment of compliance with the above conditions will only be valid for each individual case and will not create a precedent for any future cases, neither for the Authorities present under the Memorandum, nor for the potential new signatory.

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ANNEX 6 - Minimum Criteria for Port State Control Officers

1. In pursuance of the provisions of 3.3 of the Memorandum, the Port State Control Officer must be properly qualified, trained and authorized by the Authority to carry out port State control inspections without prejudice to national provisions.

2. Officers must have appropriate theoretical knowledge and practical experience of ships and their operation. They must be competent in the enforcement of the requirements of Conventions and of the relevant port State control procedures. This knowledge and competence in enforcing requirements must be acquired through documented training programmes.

3. Officers must, as a minimum, have either:

a) appropriate qualifications from a marine or nautical institution and relevant seagoing experience as a certificated ship officer holding or having held a valid STCW II/2or III/2 certificate of competency not limited as regards the operating area or propulsion power or tonnage; or

b) passed an examination recognised by the Authority as a naval architect, mechanical engineer or an engineer related to the maritime fields and worked in that capacity for at least five years; or

c) a relevant university degree or equivalent and have properly trained and qualified as ship safety officers.

4. Officers must have:

- completed a minimum of one year's service as a flag State inspector either dealing with surveys and certification in accordance with the Conventions or involved in the monitoring of the activities of recognized organizations to which statutory tasks have been delegated; or

- gained an equivalent level of competence by following a minimum of one year's field training participating in Port State Control inspections under the guidance of experienced Port State Control Officers.

5. The officer mentioned under 3a) must have gained a maritime experience of at least 5 years including periods served at sea as officers in the deck- or engine-department respectively, or as a flag State inspector or as an assistant Port State Control Officer or have other adequate experience. Such experience shall include a period of at least two years at sea as a deck or engine officer.

6. The officer must have the ability to communicate orally and in writing with seafarers in the language most commonly spoken at sea.

7. Where in a Member State security inspections are performed by Port State Control Officers; those officers shall have appropriate qualifications, which shall include sufficient theoretical and practical experience in maritime security. This shall normally include:

a) a good understanding of maritime security and how it is applied to the operations being examined;
b) a good working knowledge of security technologies and techniques;
c) a knowledge of inspection principle, procedures and techniques;
d) a working knowledge of the operations being examined.

8. Port State Control Officers will be trained, and their competency assessed, in accordance with the harmonised scheme adopted by the Committee. Authorities will ensure that each of its Port State Control Officers is trained and assessed before authorising them to take charge of inspections and periodically thereafter in accordance with the harmonised scheme.

9. In carrying out their duties Port State Control Officers will be guided by the "Code of Good Practice for PSCOs conducting inspections within the framework of the Paris MoU".

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ANNEX 7 - Ship Risk Profile

1. All ships in the information system are assigned either as high, standard or low risk based on generic and historic parameters.

2. Table 1 shows the criteria within each parameter for each ship risk profile.

3. Each criterion has a weighting which reflects the relative influence of each parameter on the overall risk of the ship.

4. High Risk Ships (HRS) are ships which meet criteria to a total value of 5 or more weighting points.

5. Low Risk Ships (LRS) are ships which meet all the criteria of the Low Risk Parameters and have had at least one inspection in the previous 36 months.

6. Standard Risk Ships (SRS) are ships which are neither HRS nor LRS.

7. A ship's risk profile is recalculated daily taking into account changes in the more dynamic parameters such as age, the 36 month history and company performance. Recalculation also occurs after every inspection and when the applicable performance tables for flag and R.O.s are changed.

Table 1: Ship Risk profile

				Profile			
				High Risk Ship (HRS)		Standard Risk Ship (SRS)	Low Risk Ship (LRS)
Generic parameters				Criteria	Weighting points	Criteria	Criteria
1	Type of ship			Chemical tankship Gas Carrier Oil tankship Bulk carrier Passenger ship	2	Neither a high risk nor a low risk ship	All types
2	Age of ship[1]			All types > 12 y	1		All ages
3a	Flag	BGW-list[2]		Black – VHR, HR, M to HR	2		White
				Black - MR	1		
3b		IMO-Audit[3]		-	-		Yes
4a	Recognized Organization	Performance[4]	H	-	-		High
			M	-	-		-
			L	Low	1		-
			VL	Very Low			-
4b		Organizations recognized by one or more Paris MoU Member States		-	-		Yes
5	Company	Performance[5]	H	-	-		High
			M	-	-		-
			L	Low	2		-
			VL	Very Low			-
Historic Parameters							
6	Number of def. recorded in each insp. within previous 36 months		Deficiencies	Not eligible	-		≤ 5 (and at least one inspection carried out in previous 36 months)
7	Number of detentions within previous 36 months		Detentions	≥ 2 detentions	1		No detention

[1] according to point 9 of this Annex
[2] according to formula in the Annual Report
[3] according to point 11 of this Annex
[4] according to formula in the Annual Report
[5] according to point 15 of this Annex

Parameters for Ship Risk Profile

Type of Ship

8. The ship type denomination is as per a list adopted by the Paris MoU Committee.

Age of Ship

9. The age of the ship is determined by the keel-laying date in dd/mm/yyyy format in the information system. A ship reaches more than 12 years on dd/mm/yyyy+12. If only the year of keel-laying is available in the information system then the ship reaches more than 12 years on 31/12/yyyy+12.

Black, Grey and White list

10. The Black, Grey and White list for flag State performance is established annually taking account of the inspection and detention history over the preceding three calendar years and is adopted by the Paris MoU Committee.

IMO Audit

11. To meet the criterion the flag States are invited to send to the Paris MoU Secretariat written confirmation that a final audit report including, where relevant, a corrective action plan has been drawn up in accordance with the "Framework and Procedures for the IMO Member State Audit Scheme" (IMO Resolution A. 1067(28))[3].

12. The Paris MoU Secretariat will maintain on the Paris MoU public website an up-to-date list of flag States which meet the flag criteria for a low risk ship.

Recognized Organization Performance

13. The performance of all Recognized Organizations is established annually taking account of the inspection and detention history over the preceding three calendar years and is adopted by the Paris MoU Committee.

14. To qualify for the criterion recognized by the Paris MoU the organization must be recognized by one or more Paris MoU Member States. The list of recognized organizations is included in a PSCC Instruction.

Company Performance

15. Company performance takes account of the detention and deficiency history of all ships in a company's fleet while that company was the ISM company for the ship. Companies are ranked as having a "very low", "low", "medium" or "high" performance. The calculation is made daily on the basis of a running 36-month period. There is no lower limit for the number of inspections needed to qualify except a company with no inspections in the last 36 months will be given a "medium performance".

16. The formula consists of two elements, the deficiency index and the detention index.

Deficiency Index

17. When counting deficiencies each ISM related deficiency is weighted at 5 points. Other deficiencies are valued at 1 point.

18. The Deficiency Index is the ratio of the total points of all deficiencies of all ships in a company's fleet to the number of inspections of all ships in the company's fleet within the last 36 months.

19. This ratio is compared with the average for all ships inspected in the Paris MoU over the last 3 calendar years to determine whether the index is average, above average or below average as follows:

[3] Flag States that previously have send written confirmation that a final audit report had been drawn up in accordance with the"Framework and Procedures for the Voluntary IMO Member State Audit Scheme" (IMO Resolution A.974(24)) will continue to meet the flag criteria for a low risk ships.

deficiency index	deficiency points per inspection
above average	> 2 above PMoU average
average	PMoU average ± 2
below average	> 2 below PMoU average

Detention Index

20. The Detention Index is the ratio of the number of detentions all ships in a company's fleet to the number of inspections of all the ships in the company's fleet within the last 36 months.

21. This ratio is compared with the average for all ships inspected in the Paris MoU over the last 3 calendar years to determine whether the index is average, above average or below average as follows.

detention index	detention rate
above average	> 2 above PMoU average
average	PMoU average ± 2 %
below average	> 2 below PMoU average

22. If a Refusal of Access Order (banning) is issued within the last 36 months to any ship in the fleet the Detention Index of the company is automatically "above average" irrespective of all other inspection results.

Company Performance Matrix

23. Using the matrix in Table 2 below the combination of deficiency and detention indices determines the performance level.

Table 2: Company Performance Matrix

Detention Index	Deficiency Index	Company Performance
above average	above average	very low
above average	average	low
above average	below average	
average	above average	
below average	above average	
average	average	medium
average	below average	
below average	average	
below average	below average	high

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ANNEX 8 - Inspection and Selection Scheme

1. Based on a ship's Risk Profile the Inspection and Selection Scheme determines the scope, frequency and priority of inspections.

2. Periodic Inspections are carried out at intervals determined by the ship risk profile.

3. Overriding or unexpected factors might trigger an inspection in between periodic inspections. This category of inspection is referred to as an Additional Inspection.

4. Ships become due for periodic inspection in the following time windows:
For HRS – between 5-6 months after the last inspection in the Paris MoU region.
For SRS – between 10-12 months after the last inspection in the Paris MoU region.
For LRS – between 24-36 months after the last inspection in the Paris MoU region.

5. Periodic Inspections and Additional Inspections count equally. Therefore the time span for the next periodic inspection re-starts after an additional inspection.

6. The selection scheme is divided into two priorities:
Priority I: ships must be inspected because either the time window has closed or there is an overriding factor
Priority II: ships may be inspected because they are within the time window or the port State considers an unexpected factor warrants an inspection

7. If a Priority II periodic inspection is not performed the ship remains Priority II until the time window closes and the ship becomes Priority I.

8. In the case of Unexpected Factors the need to undertake an additional inspection is left to the discretion of the Authority. If such a Priority II inspection is not performed it remains a Priority II ship if and when it arrives in another MoU port unless the Authority judges that any relevant information that it has received does not warrant being passed on.

9. The priority and the level of selection will be shown for each ship in the information system.

10. The category and type of inspection carried out is determined by the matrix in Table 3 below:

Table 3: Selection Scheme

Priority	Level	Category of inspection
I Ship must be inspected	Overriding factor	Additional
	HRS not inspected in last 6 months	Periodic
	SRS not inspected in last 12 months	Periodic
	Ship not inspected in last 36 months	Periodic
II Ship may be inspected	HRS not inspected in last 5 months	Periodic
	Ship with unexpected factors	Additional
	SRS not inspected in last 10 months	Periodic
	LRS not inspected in last 24 months	Periodic

Overriding and Unexpected Factors

Overriding Factors

11. The overriding factors listed below are considered sufficiently serious to trigger an additional inspection at Priority I:

- Ships reported by another Member State or the secretariat excluding unexpected factors,
- Ships involved in a collision, grounding or stranding on their way to port,
- Ships accused of an alleged violation of the provisions on discharge of harmful substances or effluents,
- Ships which have been manoeuvred in an erratic or unsafe manner whereby routing measures, adopted by the IMO, or safe navigational practices and procedures have not been followed,
- Ships which have been suspended or withdrawn from their Class for safety reasons after last PSC inspection,
- Ships which cannot be identified in the database.

Unexpected Factors

12. Unexpected factors could indicate a serious threat to the safety of the ship and the crew or to the environment but the need to undertake an additional inspection is for the professional judgement of the Authority. These factors include:

- Ships reported by pilots or relevant authorities which may include information from Vessel Traffic Services about ships' navigation,
- Ships which did not comply with the reporting obligations,
- Ships reported with an outstanding ISM deficiency (3 months after issuing of the deficiency),
- Previously detained ships (3 months after the detention),
- Ships which have been the subject of a report or complaint by the master, a seafarer, or any person or organization with a legitimate interest in the safe operation of the ship, ship on-board living and working conditions or the prevention of pollution, unless the Member State concerned deems the report or complaint to be manifestly unfounded,
- Ships operated in a manner to pose a danger,
- Ships reported with problems concerning their cargo, in particular noxious or dangerous cargo,
- Ships where information from a reliable source became known, that their risk parameters differ from the recorded ones and the risk level is thereby increased,
- Ships carrying certificates issued by a formerly Paris MoU recognized organization whose recognition has been withdrawn since the last inspection in the Paris MoU region.

13. Ships with unexpected factors which have not been inspected may be reported to the information system and remain eligible for inspection in subsequent ports as Priority II.

14. The provisions of the Memorandum apply to a ship covered by a system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services if the Memorandum applies to the ship. However a survey of a ship which is carried out by an Authority (not being the flag Administration of the ship) in accordance with on a system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services will be considered as an expanded inspection, or more detailed inspection as relevant. If the ship is not indicated as Priority I in the Information System the survey will be recorded as a Priority II inspection.

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ANNEX 9 - Inspection Type and Clear Grounds

1. The type of inspection to be carried out under Section 3.2 is determined by Table 4 below:

Table 4

Category of Inspection	Ship Risk Profile	Inspection Type		
		Initial	More detailed	Expanded
Periodic	HRS	NO	NO	YES
	SRS	YES	If clear grounds are found	If the ship is of a risk ship type* and more than 12 years old
	LRS			
Additional due to overriding or unexpected factor	All	NO	YES	According to the professional judgement of the PSCO if HRS or SRS/LRS of a risk ship Type* and more than 12 years old

* risk ship types are chemical tanker, gas carrier, oil tanker, bulk carrier and passenger ship

2. An initial inspection will consist of a visit on board the ship in order to:

- check the certificates and documents listed in Annex 10;
- check that the overall condition and hygiene of the ship including:
  - navigation bridge
  - accommodation and galley
  - decks including forecastle
  - cargo holds/area
  - engine room

  meets generally accepted international rules and standards;
- verify, if it has not previously been done, whether any deficiencies found by an Authority at a previous inspection have been rectified in accordance with the time specified in the inspection report.

3. A more detailed inspection will be carried out whenever there are clear grounds for believing, during an initial inspection, that the condition of the ship or of its equipment or crew or the working and living conditions of seafarers does not substantially meet the relevant requirements of a relevant instrument. Clear grounds exist when a Port State Control Officer finds evidence, which in his professional judgement warrants a more detailed inspection of the ship, its equipment or its crew. The absence of valid certificates or documents is considered a clear ground. Other examples of clear grounds are set out in paragraph 6.

4. A more detailed inspection will include an in-depth examination in:

- the areas where clear grounds are established
- the areas relevant to any overriding or unexpected factors
- other areas at random from the following risk areas:
  1. Documentation
  2. Structural condition
  3. Water/Weathertight condition
  4. Emergency systems
  5. Radio communication
  6. Cargo operations
  7. Fire safety
  8. Alarms
  9. Living and working condition
  10. Navigation equipment
  11. Life saving appliances
  12. Dangerous Goods
  13. Propulsion and auxiliary machinery
  14. Pollution prevention

5. The more detailed inspection will take account of the human elements covered by ILO, ISM and STCW and include operational controls as appropriate.

Clear Grounds

6. In applying Table 4 above, examples of "clear grounds" for a more detailed inspection include the following:

.1 ships with overriding or unexpected factors as listed in Annex 8;

.2 during examination of the certificates and documents referred to in Annex 10 of the Memorandum, inaccuracies have been revealed or the documents have not been properly kept, updated, or they have been falsely maintained;

.3 indications that the relevant crew members are unable to communicate appropriately with each other, or with other persons on board, or that the ship is unable to communicate with the shore-based authorities either in a common language or in the language of those authorities;

.4 a certificate has been fraudulently obtained or the holder of a certificate is not the person to whom that certificate was originally issued;

.5 the ship has a master, officer or rating holding a certificate issued by a country which has not ratified the STCW Convention;

.6 evidence of cargo and other operations not being conducted safely or in accordance with the IMO guidelines;

.7 failure of the master of an oil tanker to produce the record of the oil discharge monitoring and control system for the last ballast voyage;

.8 absence of an up-to-date muster list, or crew members not aware of their duties in the event of fire or an order to abandon the ship;

.9 the emission of false distress alerts not followed by proper cancellation procedures;

.10 the absence of principal equipment or arrangements required by the conventions;

.11 evidence from the Port State Control Officer's general impressions and observations that serious hull or structural deterioration or deficiencies exist that may place at risk the structural, watertight or weather tight integrity of the ship;

.12 information or evidence that the master or crew is not familiar with essential shipboard operations relating to the safety of ships or the prevention of pollution, or that such operations have not been carried out;

.13 the absence of a table of shipboard working arrangements or records of hours of work or rest of seafarers;

.14 the ship has changed flag for the purpose of avoiding compliance with the MLC or the ship flies the flag of a State that has not ratified the MLC 2006;

.15 there is a complaint alleging that specific working and living conditions on the ship do not conform to the requirements of the MLC 2006 or following investigation of an on shore complaint;

.16 the working and living conditions on the ship do not conform to the requirements of the MLC.

7. An expanded inspection will include a check of the overall condition, including the human element where relevant, in the following risk areas:

1. Documentation
2. Structural condition
3. Water/Weathertight condition
4. Emergency systems
5. Radio communication
6. Cargo operations including equipment
7. Fire safety
8. Alarms
9. Living and working conditions
10. Navigation equipment
11. Life saving appliances

12. Dangerous Goods
13. Propulsion and auxiliary machinery
14. Pollution prevention

and subject to their practical feasibility or any constraints relating to the safety of persons, the ship or the port, verification of the specific items in these risk areas listed for each ship type in a PSCC Instruction must be part of an expanded inspection. The inspector must use professional judgement to determine the appropriate depth of examination or testing of each specific item.

8. Inspectors must be aware that the safe execution of certain on-board operations, e.g. cargo handling, could be jeopardised by tests carried out during such operation.

9. The expanded inspection will take account of the human elements covered by ILO, ISM and STCW and include operational controls as appropriate.

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ANNEX 10 - Examination of certificates and documents

At the initial inspection the Port State Control Officer will, as a minimum and to the extent applicable, examine the following documents:

.1 International Tonnage Certificate (1969) *(ITC, Art.7);*
.2 Certificate of Registry or other document of nationality (UNCLOS);
.3 Certificates as to the ship's hull strength and machinery installations issued by the classification society in question (only to be required if the ship maintains its class with a classification society);
.4 Reports of previous port State control inspections;
.5 Passenger Ship Safety Certificate *(SOLAS 1988 Amend./CI/Reg.12, SOLAS Protocol 1988/CI/Reg.12)*;
.6 Cargo Ship Safety Construction Certificate *(SOLAS/CI/Reg.12, SOLAS Protocol 1988/CI/Reg.12)*;
.7 Cargo Ship Safety Equipment Certificate *(SOLAS 1988 Amend./CI/Reg.12, SOLAS Protocol 1988/CI/Reg. 12)*;
.8 Cargo Ship Safety Radio Certificate *(SOLAS 1988 Amend./CI/Reg.12, SOLAS Protocol 1988/CI/Reg.12)*;
.9 Cargo Ship Safety Certificate *(SOLAS Protocol 1988/CI/Reg. 12)*;
.10 Special Purpose Ship Safety Certificate *(SPS Code, C1/Art.1.7.4, Res.A.791 (19))*;
.11 For ro-ro passenger ships, information on the A/A-max ratio *(SOLAS 1995 Amend./CII-1/Reg.8-1)*;
.12 Damage control plans and booklets *(SOLAS 2006 Amend./CII-1/Reg.19, 20, 23);*
.13 Stability Booklet and information *(SOLAS 2008 Amend/CII-1/Reg.5, SOLAS/CII-1/Reg.22 and CII-1/Reg.25-8; LLP88, Reg.10)*;
.14 Manoeuvring Booklet and information *(SOLAS 1981 Amend./CII-1/Reg.28.2)*;
.15 Unattended Machinery spaces (UMS) evidence (*SOLAS 1981 Amend./CII-I/Reg.46.3)*;
.16 Exemption Certificate and any list of cargoes *(SOLAS/CII-2/Reg.10.7.1.4)*;
.17 Fire control plan *(SOLAS 2000 Amend./CII-2/Reg.15.2.4)*;
.18 Fire safety operational booklet *(SOLAS 2000 Amend./CII-2/Reg.16.3.1)*;
.19 Dangerous goods special list or manifest, or detailed stowage plan *(ILO134/A4.3(h), SOLAS 2000 Amend./CII-2/Reg.19)*;
.20 Doc. of compliance Dangerous Goods *(SOLAS 2001 Amend./CII-2/Reg.19.4)*;
.21 Ship's log book with respect to the records of drills, including security drills, and the log for records of inspection and maintenance of lifesaving appliances and arrangements and fire fighting appliances and arrangements *(SOLAS 2006 Amend./CIII/Reg.37, 19.3, 19.4, 20)*;
.22 Minimum Safe Manning Document *(SOLAS 2000 Amend./CV/Reg.14.2)*;
.23 SAR coordination plan for passenger ships trading on fixed routes *(SOLAS 1995 Amend./CV/Reg.15, 7.2)*;
.24 LRIT Conformance Test Report *(SOLAS/CV/Reg.19.1)*;
.25 Copy of the Document of compliance issued by the testing facility, stating the date of compliance and the applicable performance standards of VDR (voyage data recorder) *(SOLAS/CV/Reg.18.8)*;

.26 AIS test report *(SOLAS 2010 Amend./CV/Reg.18.9)*;
.27 For passenger ships, List of operational limitations *(SOLAS 2001 Amend./CV/Reg.30.2)*;
.28 Cargo Securing Manual *(SOLAS 2002 Amend./CVI/Reg.5.6)*;
.29 Bulk Carrier Booklet *(SOLAS 1996 Amend./CVI/Reg.7.3)*;
.30 Loading/Unloading Plan for bulk carriers *(SOLAS 1996 Amend./CVI/Reg.7.3)*;
.31 Document of authorization for the carriage of grain *(SOLAS 1991 Amend./CVI/Reg.9)*;
.32 Material Safety Data Sheets (MSDs) *(SOLAS 2009 Amend./CVI/Reg.5-1)*;
.33 INF (International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships) Certificate of Fitness *(SOLAS 1999 Amend./CVII/Reg.16, INFC 1.3)*;
.34 Copy of Document of Compliance issued in accordance with the International Management Code for the Safe Operation of Ships and for Pollution Prevention (*DoC*) ISM Code *(SOLAS 1994 Amend./CIX/Reg.4.1)*;
.35 Safety Management Certificate issued in accordance with the International Management Code for the Safe Operation of Ships and for Pollution Prevention (*SMC*) *(SOLAS 1994 Amend./CIX/Reg.4.2, 4.3)*;
.36 High Speed Craft Safety Certificate and Permit to Operate High Speed Craft *(SOLAS 1994 Amend./CX/Reg.3.2, HSCC 1.8.1, 2)*;
.37 Continuous Synopsis Record *(SOLAS 2005 Amend./CXI-1/Reg.5)*;
.38 International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, or the Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, whichever is appropriate *(GCC-4/CI/N1.6.4, IGCC/CI/N1.5.4)*;
.39 International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, whichever is appropriate *(BCC-10/CI/N1.6.3), (IBCC/CI/N1.5.4)*; (BCH/I/1.6.1);
.40 International Oil Pollution Prevention Certificate *(MARPOL/ANI/Reg.7.1)*;
.41 Survey Report Files (in case of bulk carriers or oil tankers) *(MARPOL/ANI/Reg.6)*;
.42 Oil Record Book, parts I and II *(MARPOL/ANI/R17, Reg.36)*;
.43 Shipboard Marine pollution emergency plan for Noxious Liquid Substances *(MARPOL/ANII/Reg.17)*;
.44 (Interim) Statement of compliance Condition Assessment Scheme (CAS) *(MARPOL/ANI/Reg.20.6, 21.6.1)*;
.45 For oil tankers, the record of oil discharge monitoring and control system for the last ballast voyage *(MARPOL/ANI/Reg.31.2)*;
.46 Shipboard Oil Pollution Emergency Plan (SOPEP) *(MARPOL/ANI/Reg.37.1)*;
.47 STS Operation Plan and Records of STS Operations *(MARPOL ANI/Reg.41)*;
.48 International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (*NLS*) *(MARPOL/ANII/Reg.9.1)*;
.49 Cargo Record Book *(MARPOL/ANII/Reg.15, MARPOL/ANII-APP2)*;
.50 Procedures and Arrangements Manual (chemical tankers) *(MARPOL/ANII/Reg.14.1 + P&A manual)*;
.51 International Sewage Pollution Prevention Certificate *(ISPPC) (MARPOL/ANIV/Reg.5.1);*
.52 Garbage Management Plan *(MARPOL/ANV/appendix I)*;
.53 Garbage Record Book *(MARPOL/ANV/appendix)*;
.54 International Air Pollution Prevention Certificate *(IAPPC) (MARPOL/ANVI/Reg.6.1)*;
.55 Logbook for fuel oil change-over *(MARPOL/ANVI/Reg.14.5)*;
.56 Type approval certificate of incinerator *(MARPOL/ANVI/Reg.16.6.1) + Appendix IV(1))*;
.57 Bunker delivery notes *(MARPOL/ANVI/Reg.18.5+ Appendix V)*;
.58 International Energy Efficiency Certificate *(MARPOL/ANVI/Reg.6)*;
.59 Ship Energy Efficiency Management Plan (SEEMP) *(MARPOL/ANVI/Reg.22)*;
.60 EEDI Technical File *(MARPOL/ANVI/Reg. 20)*;
.61 Engine International Air Pollution Prevention Certificate *(EIAPPC) (NoxTC2008/ 2.1.1.1)*;
.62 Technical files *(NoxTC2008/2.3.6)*;
.63 Record book of engine parameters *(NoxTC2008/6.2.2.7.1)*;
.64 International Load Line Certificate (1966) *(LLP'88 Art.16.1)*;

.65 International Load Line Exemption Certificate *(LLP'88 Art.16.2)*;
.66 Certificates issued in accordance with STCW Convention *(STCW95/Art.VI, RI/2, Sect.A-I/2)*;
.67 Cargo Gear Record Book *(ILO134/C32/Art. 9(4)/ ILO152(25))*;
.68 Certificates loading and unloading equipment *(ILO134/A4.3(e);ILO/C32/Art 9(4))*;
.69 Maritime Labour Certificate and Declaration of Maritime Labour Compliance part I and II (MLC and DMLC part I and II) *(MLC, 2006/Reg.5.1/ standard A5.1.3)*;
.70 Medical certificates *(MLC, 2006/ Reg. 1.2/Standard A1.2 or ILO73)*;
.71 Table of shipboard working arrangements *(MLC, 2006/ Reg.2.3/ standard A2.3, 10 or ILO180/Part II/ Art 5.7 a &b and STCW95/A-VIII/1.5)*;
.72 Records of hours of work or rest of seafarers *(MLC, 2006/Reg. 2.3/standard A2.3, 10 or ILO180/Part II/Art 8.1 and STCW95/A-VIII/1.5)*;
.73 Certificate or documentary evidence of financial security for repatriation *(MLC, 2006/Reg 2.5/ Standard A2.5.2)*;
.74 Certificate or documentary evidence of financial security relating to shipowners liability (*MLC, 2006/Reg. 4.2/Standard A4.2.1)*
.75 Mobile Offshore Drilling Unit Safety Certificate (*MODU Code/I/Section 6)*;
.76 Certificate of insurance or any other financial security in respect of civil liability for oil pollution damage *(CLC69P92/AVII.2)*;
.77 Certificate of insurance or any other financial security in respect of civil liability for Bunker oil pollution damage *(BUNKERS 2001/Art.7.2)*;
.78 International Ship Security Certificate (ISSC) *(ISPSC/PA/19.2.1)*;
.79 Record of AFS *(AFS/Annex 4/Reg.2(1))*;
.80 International Anti-Fouling System Certificate (IAFS Certificate) *(AFS/Annex 4/Reg.2(1))*;
.81 Declaration on AFS *(AFS/Annex 4/Reg.5(1));*
.82 Polar Ship Certificate *(Polar Code/P.1-A/C.1/Reg.1.3)*
.83 Polar Water Operational Manual *(PWOM) (Polar Code/P.1-A/C.2*

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ANNEX 11 - Inspection Commitments of Authorities

Inspection Commitments of Member States

1. The inspection commitments of each Authority are:
a) to carry out an inspection on every ship calling at one of its ports and anchorages with a Priority I status, and
b) to carry out a number of inspections on Priority I and Priority II ships which corresponds at least to its annual inspection commitment.

2. The information system shows, daily, whether a Member State is ahead or behind the commitment in 1.b above.

Flexibility in Priority I commitment

3. The following paragraphs describe the flexibility for meeting the commitment in paragraph 1.a above.

4. Ships which arrive in port as a Priority I must be selected for inspection. However the Member State may postpone the inspection in the following ways:
a) to the next call of the ship at the same Member State, provided that the ship does not call at another port within the Paris MoU region and the postponement is no more than 15 days;
b) to another port of call if this port is within the Paris MoU region and its authority agrees in advance to inspect the ship and the postponement is no more than 15 days.
Inspections which are postponed in this way and recorded in the information system are not considered as missed inspections.

5. In addition to the flexibility provided in paragraph 4 above an Authority may miss:

a) up to 5% of the total number of Priority I ships with a high risk profile calling at its ports and anchorages;

b) up to 10% of the total number of Priority I ships other than those with a high risk profile calling at its ports and anchorages.

6. In following circumstances Priority I inspections which are missed are not counted in the allowance mentioned in paragraph 5 above:

a) if in the judgement of the authority the conduct of the inspection would create a risk to the safety of inspectors, the ship, its crew or to the port, or to the marine environment, or

b) if the ship call takes place only during night time. Member States should however ensure that ships which only make night time calls do not avoid inspection completely, or

c) additionally in the case of a ship which only calls at an anchorage within the jurisdiction of a port, if the ship is inspected in another port or anchorages within the Paris MoU region within 15 days, or

d) additionally in the case of a ship which only calls at an anchorage within the jurisdiction of a port, the call is only during night time or if its duration is too short for the inspection to be carried out satisfactorily.

7. In the circumstances described in paragraph 6 above the Authority is required to record in the information system the reasons for missing the inspection.

Allowance for Member State receiving an excessive number Priority I ships

8. The fair share scheme and the selection scheme are intended to ensure that a Member State is not be required to carry out more Priority I inspections than its annual commitment. However, as a safeguard, for a State inspecting more Priority I ships than its annual commitment the allowance of missed inspections, as described in paragraph 5 would be 30%.

Calculation of the Regional Commitment

9. In order to calculate the annual inspection commitment of each Member State referred to in paragraph 1b above the first step is to determine the overall annual commitment for the Paris MoU region (the "regional commitment").

10. The regional commitment for the year in question is estimated by taking the average number of inspections required in the previous 3 years.

11. The annual regional commitment is calculated by the information system by adding the following:

.1 number of Priority I inspections;
(mandatory periodic and additional)
.2 number of Priority II periodic inspections;
(i.e. excluding inspections triggered by unexpected factors)
.3 number of Priority I ships which are not inspected during the year.
(note: not the number of inspections missed since the same ship could be missed several times)

Calculation of annual inspection commitment for each Member State

12. The second step in calculating an inspection commitment for each Member State is to calculate its share of the regional commitment. This share is the three-year average number of individual ships calling at the Member State as a percentage of the sum of the number of individual ships calling at each Member State.

Allowance for a Member State with too few opportunities to inspect

13. A Member State could receive too few Priority I and Priority II inspections to be able to reach its annual commitment. In such a case it will be considered to have met the commitment if it has inspected at least 85% of Priority II ships. The commitment in 1.a and the corresponding allowance in paragraph 5 still apply.

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ANNEX 12 - Reporting obligations for ships

Electronic means shall be used whenever possible for any communication provided for in this Annex.

72hour message (72 ETA)

1. A ship which, in accordance with Annex 9, is eligible for an expanded inspection and bound for a port or anchorage of a Member State, shall notify its arrival 72 hours in advance to the Authority or earlier if required by national provisions.

2. At least following information shall be submitted:

(a) ship identification (mandatory IMO number and additional name, call sign and/or MMSI number);
(b) port of destination;
(c) estimated time of arrival (ETA);
(d) estimated time of departure (ETD);
(e) planned duration of the call;
(f) for tankers
  (i) configuration: single hull, single hull with SBT, double hull;
  (ii) condition of the cargo and ballast tanks: full, empty, inerted;
  (iii) volume and nature of cargo;
(g) planned operations at the port or anchorage of destination (loading, unloading, other);
(h) planned statutory survey inspections and substantial maintenance and repair work to be carried out whilst in the port of destination;
(i) date of last expanded inspection in the Paris MoU region.

24hour message (24 ETA)

3. The operator, agent or master of ship bound for a port or anchorage of a Member State shall notify its arrival at least 24 hours in advance, or at the latest, at the time the ship leaves the previous port, if the voyage time is less than 24 hours, or if the port of call is not known or it is changed during the voyage, as soon as this information is available.

4. Following information shall be submitted:

(a) ship identification (mandatory IMO number and additional name, call sign and/or MMSI number);
(b) port of destination;
(c) estimated time of arrival (ETA);
(d) estimated time of departure (ETD).

Actual arrival message (ATA)

5. Member States report the actual time of arrival (ATA) of any ship calling at Member States ports (located in the Paris MoU region) and anchorages, together with an identifier of the port concerned within a reasonable time to the Information System.

6. Following information shall be submitted:

(a) ship identification (mandatory IMO number and additional name, call sign and/or MMSI number);
(b) port;
(c) actual time of arrival;
(d) at anchorage: yes, no.

Actual departure message (ATD)

7. Member States shall transfer the actual time of departure (ATD) of any ship calling at Member States ports and anchorages, together with an identifier of the port concerned within a reasonable time to the Information System.

8. The following information shall be submitted:

(a) ship identification (mandatory IMO number and additional name, call sign and/or MMSI number);

(b) port;

(c) actual time of departure.

Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port State control (Recast)

DIRECTIVE 2009/16/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 23 APRIL 2009 ON PORT STATE CONTROL* (Recast)

The European Parliament and the Council of the European Union,
Having regard to the Treaty establishing the European Community, and in particular Article 80(2) thereof,
Having regard to the proposal from the Commission,
Having regard to the opinion of the European Economic and Social Committee[4],
Having regard to the opinion of the Committee of the Regions[5],
Acting in accordance with the procedure laid down in Article 251 of the Treaty[6], in the light of the joint text approved by the Conciliation Committee on 3 February 2009,
Whereas:

(1) Council Directive 95/21/EC of 19 June 1995 on port State control of shipping[7] has been substantially amended several times. Since further amendments are to be made, it should be recast in the interests of clarity.

(2) The Community is seriously concerned about shipping casualties and pollution of the seas and coastlines of Member States.

(3) The Community is equally concerned about on-board living and working conditions.

(4) Safety, pollution prevention and on-board living and working conditions may be effectively enhanced through a drastic reduction of substandard ships from Community waters, by strictly applying Conventions, international codes and resolutions.

(5) To this end, in accordance with Council Decision 2007/431/EC of 7 June 2007 authorising Member States to ratify, in the interests of the European Community, the Maritime Labour Convention, 2006, of the International Labour Organisation[8], Member States should make efforts to ratify, for the parts falling under Community competence, that Convention as soon as possible, preferably before 31 December 2010.

(6) Responsibility for monitoring the compliance of ships with the international standards for safety, pollution prevention and on-board living and working conditions lies primarily with the flag State. Relying, as appropriate, on recognised organisations, the flag State fully guarantees the completeness and efficiency of the inspections and surveys undertaken to issue the relevant certificates. Responsibility for maintenance of the condition of the ship and its equipment after survey to comply with the requirements of Conventions applicable to the ship lies with the ship company. However, there has been a serious failure on the part of a number of flag States to implement and enforce international standards. Henceforth, as a second line of defence against substandard shipping, the monitoring of compliance with the international standards for safety, pollution prevention and on-board living and working conditions should also be ensured by the port State, while recognising that port State control inspection is not a survey and the relevant inspection forms are not seaworthiness certificates.

(7) A harmonised approach to the effective enforcement of these international standards by Member States in respect of ships sailing in the waters under their jurisdiction and using their ports should avoid distortions of competition.

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* Consolidated text, 2009 L 16, 31.12.2015, p. 1. Original text in OJ L131, 28.5.2009, p. 57; amended by: Directive 2013/38/EU of the European Parliament and of the Council of 12 August 2013 in OJ L218, 14.8.2013, p. 1; Regulation (EU) 1257/2013 of the European Parliament and of the Council of 20 November 2013 in OJ L330, 10.12.2013, p. 1; Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 in OJ L123, 19.5.2015, p. 55; corrected by: Corrigendum, OJ L 32, 1.2.2013, p. 23

4 OJ C318, 23.12.2006, p. 195.

5 OJ C229, 22.9.2006, p. 38.

6 Opinion of the European Parliament of 25 April 2007 (OJ C74 E, 20.3.2008, p. 584), Council Common Position of 6 June 2008 (OJ C198 E, 5.8.2008, p. 1), Position of the European Parliament of 24 September 2008 (not yet published in the Official Journal), Council Decision of 26 February 2009 and Legislative Resolution of the European Parliament of 11 March 2009 (not yet published in the Official Journal).

7 OJ L157, 7.7.1995, p. 1.

8 OJ L161, 22.6.2007, p. 63.

(8) The shipping industry is vulnerable to acts of terrorism. Transport security measures should be effectively implemented and Member States should vigorously monitor compliance with security rules by carrying out security checks.

(9) Advantage should be taken of the experience gained during the operation of the Paris Memorandum of Understanding on Port State Control (Paris MOU), signed in Paris on 26 January 1982.

(10) The European Maritime Safety Agency (EMSA) established by Regulation (EC) No 1406/2002 of the European Parliament and of the Council[1], should provide the necessary support to ensure the convergent and effective implementation of the port State control system. EMSA should in particular contribute to the development and implementation of the inspection database set up in accordance with this Directive and of a harmonised Community scheme for the training and assessment of competences of port State control inspectors by Member States.

(11) An efficient port State control system should seek to ensure that all ships calling at ports and anchorages within the Community are regularly inspected. Inspection should concentrate on substandard ships, while quality ships, meaning those which have satisfactory inspection records or which fly the flag of a State complying with the Voluntary International Maritime Organisation (IMO) Member State Audit Scheme, should be rewarded by undergoing less frequent inspections. In particular to this effect, Member States should give overall priority to ships due for inspections with a high risk profile.

(12) Such new inspection arrangements should be incorporated into the Community port State control system as soon as its various aspects have been defined and on the basis of an inspection- sharing scheme whereby each Member State contributes fairly to the achievement of the Community objective of a comprehensive inspection scheme and the volume of inspections is shared in an equitable manner among the Member States. This inspection-sharing scheme should be revised taking into account the experience gained with the new port State control system with a view to improving its effectiveness. Moreover, Member States should recruit and retain the requisite number of staff, including qualified inspectors, taking into account the volume and characteristics of shipping traffic at each port.

(13) The inspection system set up by this Directive takes into account the work carried under the Paris MOU. Since any developments arising from the Paris MOU should be agreed at Community level before being made applicable within the EU, close coordination should be established and maintained between the Community and the Paris MOU in order to facilitate as much convergence as possible.

(14) The Commission should manage and update the inspection database, in close collaboration with the Paris MOU. The inspection database should incorporate inspection data of Member States and all signatories to the Paris MOU. Until the Community maritime information system, SafeSeaNet, is fully operational and allows for an automatic record of the data concerning ships' calls in the inspection database, Member States should provide the Commission with the information needed to ensure a proper monitoring of the application of this Directive, in particular concerning the movements of ships. On the basis of the inspection data provided by Member States, the Commission should retrieve from the inspection database data on the risk profile of ships, on ships due for inspections and on the movement of ships and should calculate the inspection commitments for each Member State. The inspection database should also be capable of interfacing with other Community maritime safety databases.

(15) Member States should endeavour to review the method of drawing the white, grey and black list of flag States in the framework of the Paris MOU, in order to ensure its fairness, in particular with respect to the way it treats flag States with small fleets.

(16) The rules and procedures for port State control inspections, including criteria for the detention of ships, should be harmonised to ensure consistent effectiveness in all ports, which would also drastically reduce the selective use of certain ports of destination to avoid the net of proper control.

(17) Periodic and additional inspections should include an examination of pre-identified areas for each ship, which will vary according to the type of ship, the type of inspection and the findings of previous port State control inspections. The inspection database should indicate the elements to identify the risk areas to be checked at each inspection.

[1] OJ L208, 5.8.2002, p. 1.

(18) Certain categories of ships present a major accident or pollution hazard when they reach a certain age and should therefore be subject to an expanded inspection. The details of such expanded inspection should be laid down.

(19) Under the inspection system set up by this Directive, the intervals between periodic inspections on ships depend on their risk profile that is determined by certain generic and historical parameters. For high risk ships this interval should not exceed six months.

(20) In order to provide the competent port State control authorities with information on ships in ports or anchorages, port authorities or bodies or the authorities or bodies designated for that purpose should forward notifications on arrivals of ships, on receipt to the extent possible.

(21) Some ships pose a manifest risk to maritime safety and the marine environment because of their poor condition, flag performance and history. It is therefore legitimate for the Community to dissuade those ships from entering the ports and anchorages of Member States. The refusal of access should be proportionate and could result in a permanent refusal of access, if the operator of the ship persistently fails to take corrective action in spite of several refusals of access and detentions in ports and anchorages within the Community. Any third refusal of access can only be lifted if a number of conditions designed to ensure that the ship concerned can be operated safely in Community waters, in particular relating to the flag State of the ship and the managing company, are fulfilled. Otherwise, the ship should be permanently refused access to ports and anchorages of the Member States. In any case, any subsequent detention of the ship concerned should lead to a permanent refusal of access to ports and anchorages of the Member States. In the interests of transparency, the list of ships refused access to ports and anchorages within the Community should be made public.

(22) With a view to reducing the burden placed on certain administrations and companies by repetitive inspections, surveys under Council Directive 1999/35/EC of 29 April 1999 on a system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services[1], carried out on ro-ro ferries or high-speed passenger craft by a host State which is not the flag State of the vessel, and which include at least all the items of an expanded inspection, should be taken into account when calculating the risk profile of a ship, the intervals between inspections and the fulfilment of the inspection commitment of each Member State. In addition, the Commission should examine whether it is appropriate that Directive 1999/35/EC be amended in the future with a view of enhancing the level of safety required for the operation of ro-ro ferries and high-speed passenger craft to and from ports of Member States.

(23) Non-compliance with the provisions of the relevant Conventions should be rectified. Ships which need to be the subject of corrective action should, where the observed deficiencies are clearly hazardous to safety, health or the environment, be detained until the shortcomings are rectified.

(24) A right of appeal against detention orders by the competent authorities should be made available, in order to prevent unreasonable decisions which may cause undue detention and delay. Member States should cooperate in order to ensure that appeals are dealt with in a reasonable time in accordance with their national legislation.

(25) Authorities and inspectors involved in port State control activities should have no conflict of interests with the port of inspection or with the ships inspected, or of related interests. Inspectors should be adequately qualified and receive appropriate training to maintain and improve their competence in the conduct of inspections. Member States should cooperate in developing and promoting a harmonised Community scheme for the training and assessment of competences of inspectors.

(26) Pilots and port authorities or bodies should be enabled to provide useful information on apparent anomalies found on board ships.

(27) Complaints from persons with a legitimate interest regarding on-board living and working conditions should be investigated. Any person lodging a complaint should be informed of the follow-up action taken with regard to that complaint.

(28) Cooperation between the competent authorities of Member States and other authorities or organisations is necessary to ensure an effective follow-up with regard to ships with deficiencies, which have been permitted to proceed, and for the exchange of information about ships in port.

[1] OJ L138, 1.6.1999, p. 1.

(29) Since the inspection database is an essential part of port State control, Member States should ensure that it is updated in the light of Community requirements.

(30) Publication of information concerning ships and their operators or companies which do not comply with international standards on safety, health and protection of the marine environment, taking account of the companies' fleet size, may be an effective deterrent discouraging shippers from using such ships and an incentive to their owners to take corrective action. With regard to the information to be made available, the Commission should establish a close collaboration with the Paris MOU and take account of any information published in order to avoid unnecessary duplication. Member States should have to provide the relevant information only once.

(31) All costs of inspecting, which warrant detention of ships, and those incurred in lifting a refusal of access, should be borne by the owner or the operator.

(32) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission[1].

(33) In particular, the Commission should be empowered to amend this Directive in order to apply subsequent amendments to Conventions, international codes and resolutions related thereto and to establish the rules of implementation for the provisions of Articles 8 and 10. Since those measures are of general scope and are designed to amend non-essential elements of this Directive, inter alia, by supplementing it with new non-essential elements, they must be adopted in accordance with the regulatory procedure with scrutiny provided for in Article 5a of Decision 1999/468/EC.

(34) Since the objectives of this Directive, namely to reduce substandard shipping in waters under Member States' jurisdiction through improvement of the Community's inspection system for seagoing ships and the development of the means of taking preventive action in the field of pollution of the seas, cannot be sufficiently achieved by the Member States and can, therefore, by reason of its scale and effects, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve those objectives.

(35) The obligation to transpose this Directive into national law should be confined to those provisions which represent a substantive change as compared with Directive 95/21/EC. The obligation to transpose the provisions which are unchanged arises under that Directive.

(36) This Directive should be without prejudice to the obligations of Member States relating to the time limits for transposition into national law of the Directives set out in Annex XV, Part B.

(37) The port State control system established in accordance with this Directive should be implemented on the same date in all Member States. In this context, the Commission should ensure that appropriate preparatory measures are taken, including the testing of the inspection database and the provision of training to inspectors.

(38) In accordance with point 34 of the Interinstitutional Agreement on better law-making[2], Member States are encouraged to draw up, for themselves and in the interests of the Community, their own tables illustrating, as far as possible, the correlation between this Directive and the transposition measures, and to make them public.

(39) In order not to impose a disproportionate administrative burden on landlocked Member States, a *de minimis* rule should allow such Member States to derogate from the provisions of this Directive, which means that such Member States, as long as they meet certain criteria, are not obliged to transpose this Directive.

(40) In order to take into account the fact that the French overseas departments belong to a different geographical area, are to a large extent Parties to regional port State control memoranda other than the Paris MOU and have very limited traffic flows with mainland Europe, the Member State concerned should be allowed to exclude those ports from the port State control system applied within the Community,

[1] OJ L184, 17.7.1999, p. 23.

[2] OJ C321, 31.12.2003, p. 1.

have adopted this Directive:

Article 1 **Purpose**

The purpose of this Directive is to help to drastically reduce substandard shipping in the waters under the jurisdiction of Member States by:

(a) increasing compliance with international and relevant Community legislation on maritime safety, maritime security, protection of the marine environment and on-board living and working conditions of ships of all flags;

(b) establishing common criteria for control of ships by the port State and harmonising procedures on inspection and detention, building upon the expertise and experience under the Paris MOU;

(c) implementing within the Community a port State control system based on the inspections performed within the Community and the Paris MOU region, aiming at the inspection of all ships with a frequency depending on their risk profile, with ships posing a higher risk being subject to a more detailed inspection carried out at more frequent intervals.

Article 2 **Definitions**

For the purposes of this Directive the following definitions shall apply:

1. 'Conventions' means the following Conventions, with the Protocols and amendments thereto, and related codes of mandatory status, in their up-to-date version:

(a) the International Convention on Load Lines, 1966 (LL 66);

(b) the International Convention for the Safety of Life at Sea, 1974 (SOLAS 74);

(c) the International Convention for the Prevention of Pollution from Ships, 1973, and the 1978 Protocol relating thereto (Marpol 73/78);

(d) the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 78/95);

(e) the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (Colreg 72);

(f) the International Convention on Tonnage Measurement of Ships, 1969 (ITC 69);

(h) the International Convention on Civil Liability for Oil Pollution Damage, 1992 (CLC 92);

(i) the Maritime Labour Convention, 2006 (MLC 2006);

(j) the International Convention on the Control of Harmful Anti- fouling Systems on Ships, 2001 (AFS 2001);

(k) the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (Bunkers Convention, 2001).

2. 'Paris MOU' means the Memorandum of Understanding on Port State Control, signed in Paris on 26 January 1982, in its up-to-date version.

3. 'Framework and procedures for the Voluntary IMO Member State Audit Scheme' means IMO Assembly Resolution A.974(24).

4. 'Paris MOU region' means the geographical area in which the signatories to the Paris MOU conduct inspections in the context of the Paris MOU.

5. 'Ship' means any seagoing vessel to which one or more of the Conventions apply, flying a flag other than that of the port State.

6. 'Ship/port interface' means the interactions that occur when a ship is directly and immediately affected by actions involving the movement of persons or goods or the provision of port services to or from the ship.

7. 'Ship at anchorage' means a ship in a port or another area within the jurisdiction of a port, but not at berth, carrying out a ship/port interface.

8. 'Inspector' means a public-sector employee or other person, duly authorised by the competent authority of a Member State to carry out port-State control inspections, and responsible to that competent authority.

9. 'Competent authority' means a maritime authority responsible for port State control in accordance with this Directive.

10. 'Night time' means any period of not less than seven hours, as defined by national law, and which must include, in any case, the period between midnight and 5.00.

11. 'Initial inspection' means a visit on board a ship by an inspector, in order to check compliance with the relevant Conventions and regulations and including at least the checks required by Article 13(1).

12. 'More detailed inspection' means an inspection where the ship, its equipment and crew as a whole or, as appropriate, parts thereof are subjected, in the circumstances specified in Article 13(3), to an in-depth examination covering the ship's construction, equipment, manning, living and working conditions and compliance with on- board operational procedures.

13. 'Expanded inspection' means an inspection, which covers at least the items listed in Annex VII. An expanded inspection may include a more detailed inspection whenever there are clear grounds in accordance with Article 13(3).

14. 'Complaint' means any information or report submitted by any person or organisation with a legitimate interest in the safety of the ship, including an interest in safety or health hazards to its crew, on-board living and working conditions and the prevention of pollution.

15. 'Detention' means the formal prohibition for a ship to proceed to sea due to established deficiencies which, individually or together, make the ship unseaworthy.

16. 'Refusal of access order' means a decision issued to the master of a ship, to the company responsible for the ship and to the flag State notifying them that the ship will be refused access to all ports and anchorages of the Community.

17. 'Stoppage of an operation' means a formal prohibition for a ship to continue an operation due to established deficiencies which, individually or together, would render the continued operation hazardous.

18. 'Company' means the owner of the ship or any other organisation or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the owner of the ship and who, on assuming such responsibility, has agreed to take over all the duties and responsibilities imposed by the International Safety Management (ISM) Code.

19. 'Recognised Organisation' means a classification company or other private body, carrying out statutory tasks on behalf of a flag State administration.

20. 'Statutory certificate' means a certificate issued by or on behalf of a flag State in accordance with Conventions.

21. 'Classification certificate' means a document confirming compliance with SOLAS 74, Chapter II-1, Part A-1, Regulation 3-1.

22. 'Inspection database' means the information system contributing to the implementation of the port State control system within the Community and concerning the data related to inspections carried out in the Community and the Paris MOU region.

23. 'Maritime labour certificate' means the certificate referred to in Regulation 5.1.3 of MLC 2006.

24. 'Declaration of maritime labour compliance' means the declaration referred to in Regulation 5.1.3 of MLC 2006.

All the references in this Directive to the Conventions, international codes and resolutions, including for certificates and other documents, shall be deemed to be references to those Conventions, international codes and resolutions in their up-to-date versions.

Article 3 **Scope**

1. This Directive shall apply to any ship and its crew calling at a port or anchorage of a Member State to engage in a ship/port interface.

France may decide that the ports and anchorages covered by this paragraph do not include ports and anchorages situated in the overseas departments referred to in Article 299(2) of the Treaty.

If a Member State performs an inspection of a ship in waters within its jurisdiction, other than at a port, it shall be considered as an inspection for the purposes of this Directive.

Nothing in this Article shall affect the rights of intervention available to a Member State under the relevant Conventions.

Member States which do not have seaports and which can verify that of the total number of individual vessels calling annually over a period of the three previous years at their river ports, less than 5 % are ships covered by this Directive, may derogate from the provisions of this Directive.

Member States which do not have seaports shall communicate to the Commission at the latest on the date of transposition of the Directive the total number of vessels and the number of ships calling at their ports during the three-year period referred to above and shall inform the Commission of any subsequent change to the abovementioned figures.

2. Where the gross tonnage of a ship is less than 500, Member States shall apply those requirements of a relevant Convention which are applicable and shall, to the extent that a Convention does not apply, take such action as may be necessary to ensure that the ships concerned are not clearly hazardous to safety, health or the environment. In applying this paragraph, Member States shall be guided by Annex 1 to the Paris MOU.

3. When inspecting a ship flying the flag of a State which is not a party to a Convention, Member States shall ensure that the treatment of that ship and its crew is not more favourable than that of a ship flying the flag of a State party to that Convention. Such ship shall be subject to a more detailed inspection in accordance with procedures established by the Paris MOU.

4. Fishing vessels, warships, naval auxiliaries, wooden ships of a primitive build, government ships used for non-commercial purposes and pleasure yachts not engaged in trade shall be excluded from the scope of this Directive.

5. Measures adopted to give effect to this Directive shall not lead to a reduction in the general level of protection of seafarers under Union social law in the areas to which this Directive applies, as compared to the situation which already prevails in each Member State. In implementing those measures, if the competent authority of the port State becomes aware of a clear violation of Union law on board ships flying the flag of a Member State, it shall, in accordance with national law and practice, forthwith inform any other relevant competent authority in order for further action to be taken as appropriate.

Article 4 **Inspection powers**

1. Member States shall take all necessary measures, in order to be legally entitled to carry out the inspections referred to in this Directive on board foreign ships, in accordance with international law.

2. Member States shall maintain appropriate competent authorities, to which the requisite number of staff, in particular qualified inspectors, for the inspection of ships is assigned, for example, through recruitment, and shall take appropriate measures to ensure that inspectors perform their duties as laid down in this Directive and in particular that they are available for carrying out the inspections required in accordance with this Directive.

Article 5 **Inspection system and annual inspection commitment**

1. Member States shall carry out inspections in accordance with the selection scheme described in Article 12 and the provisions in Annex I.

2. In order to comply with its annual inspection commitment, each Member State shall:

(a) inspect all Priority I ships, referred to in Article 12(a), calling at its ports and anchorages; and

(b) carry out annually a total number of inspections of Priority I and Priority II ships, referred to in Article 12(a) and (b), corresponding at least to its share of the total number of inspections to be carried out annually within the Community and the Paris MOU region. The inspection share of each Member State shall be based on the number of individual ships calling at ports of the Member State concerned in relation to the sum of the number of individual ships calling at ports of each State within the Community and the Paris MOU region.

3. With a view to calculating the share of the total number of inspections to be carried out annually within the Community and the Paris MOU region referred to in point (b) of paragraph 2, ships at anchorage shall not be counted unless otherwise specified by the Member State concerned.

Article 6 **Modalities of compliance with the inspection commitment**

A Member State which fails to carry out the inspections required in Article 5(2)(a), complies with its commitment in accordance with that provision if such missed inspections do not exceed:

(a) 5 % of the total number of Priority I ships with a high risk profile calling at its ports and anchorages;

(b) 10 % of the total number of Priority I ships other than those with a high risk profile calling at its ports and anchorages.

Notwithstanding the percentages in (a) and (b), Member States shall prioritise inspection of ships, which, according to the information provided by the inspection database, call at ports within the Community infrequently.

Notwithstanding the percentages in (a) and (b), for Priority I ships calling at anchorages, Member States shall prioritise inspection of ships with a high risk profile, which, according to the information provided by the inspection database, call at ports within the Community infrequently.

Article 7 **Modalities allowing a balanced inspection share within the Community**

1. A Member State in which the total number of calls of Priority I ships exceeds its inspection share referred to in Article 5(2)(b), shall be regarded as complying with such commitment, if a number of inspections on Priority I ships carried out by that Member State corresponds at least to such inspection share and if that Member State does not miss more than 30 % of the total number of Priority I ships calling at its ports and anchorages.

2. A Member State, in which the total number of calls of Priority I and Priority II ships is less than the inspection share referred to in Article 5(2)(b), shall be regarded as complying with such commitment, if that Member State carries out the inspections of Priority I ships required under Article 5(2)(a) and inspections on at least 85 % of the total number of Priority II ships calling at its ports and anchorages.

3. The Commission shall, in its review referred to in Article 35, examine in particular the impact of this Article on the inspection commitment, taking into account the expertise and the experience gained in the Community and under the Paris MOU. The review shall take into account the objective of inspecting all ships calling at ports and anchorages within the Community. If appropriate, the Commission shall propose complementary measures with a view to improving the effectiveness of the inspection system applied in the Community, and, if necessary, a new review of the impact of this Article at a later stage.

Article 8 **Postponement of inspections and exceptional circumstances**

1. A Member State may decide to postpone the inspection of a Priority I ship in the following circumstances:

(a) if the inspection may be carried out at the next call of the ship in the same Member State, provided that the ship does not call at any other port in the Community or the Paris MOU region in between and the postponement is not more than 15 days; or

(b) if the inspection may be carried out in another port of call within the Community or the Paris

MOU region within 15 days, provided the State in which such port of call is located has agreed in advance to perform the inspection.

If an inspection is postponed in accordance with point (a) or (b) and recorded in the inspection database, a missed inspection shall not be counted as a missed inspection against the Member States which postponed the inspection.

Nevertheless, where an inspection of a Priority I ship is not performed, the relevant ship shall not be exempted from being inspected at the next port of call within the Community in accordance with this Directive.

2. Where an inspection is not performed on Priority I ships for operational reasons, it shall not be counted as a missed inspection, provided that the reason for missing the inspection is recorded in the inspection database and the following exceptional circumstances occur:

(a) in the judgement of the competent authority the conduct of the inspection would create a risk to the safety of inspectors, the ship, its crew or to the port, or to the marine environment; or

(b) the ship call takes place only during night time. In this case Member States shall take the measures necessary to ensure that ships which call regularly during night time are inspected as appropriate.

3. If an inspection is not performed on a ship at anchorage, it shall not be counted as a missed inspection if:

(a) the ship is inspected in another port or anchorage within the Community or the Paris MOU region in accordance with Annex I within 15 days; or

(b) the ship call takes place only during night time or its duration is too short for the inspection to be carried out satisfactorily, and the reason for missing the inspection is recorded in the inspection database; or

(c) in the judgement of the competent authority the conduct of the inspection would create a risk to the safety of inspectors, the ship, its crew or to the port, or to the marine environment, and the reason for missing the inspection is recorded in the inspection database.

Article 9 **Notification of arrival of ships**

1. The operator, agent or master of a ship which, in accordance with Article 14, is eligible for an expanded inspection and bound for a port or anchorage of a Member State, shall notify its arrival in accordance with the provisions laid down in Annex III.

2. On receipt of the notification referred to in paragraph 1 of this Article and in Article 4 of Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system[1], the port authority or body or the authority or body designated for that purpose shall forward such information to the competent authority.

3. Electronic means shall be used whenever possible for any communication provided for in this Article.

4. The procedures and formats developed by Member States for the purposes of Annex III to this Directive shall comply with the relevant provisions laid down in Directive 2002/59/EC regarding ships' notifications.

Article 10 **Ship risk profile**

1. All ships calling at a port or anchorage of a Member State shall, in the inspection database, be attributed a ship risk profile which determines their respective priority for inspection, the intervals between the inspections and the scope of inspections.

2. The risk profile of a ship shall be determined by a combination of generic and historical risk parameters as follows:

(a) Generic parameters

[1] OJ L 208, 5.8.2002, p. 10.

Generic parameters shall be based on the type, age, flag, recognised organisations involved and company performance in accordance with Annex I, Part I.1 and Annex II.

(b) Historical parameters

Historical parameters shall be based on the number of deficiencies and detentions during a given period in accordance with Annex I, Part I.2 and Annex II.

3. Implementing powers shall be conferred on the Commission to implement a methodology for the consideration of generic risk parameters relating in particular to the flag State criteria and company performance criteria. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

Article 11 **Frequency of inspections**

Ships calling at ports or anchorages within the Community shall be subject to periodic inspections or to additional inspections as follows:

(a) Ships shall be subject to periodic inspections at predetermined intervals depending on their risk profile in accordance with Annex I, Part I. The interval between periodic inspections of ships shall increase as the risk decreases. For high risk ships, this interval shall not exceed six months.

(b) Ships shall be subject to additional inspections regardless of the period since their last periodic inspection as follows:

— the competent authority shall ensure that ships to which overriding factors listed in Annex I, Part II 2A, apply are inspected,

— ships to which unexpected factors listed in Annex I, Part II 2B, apply may be inspected. The decision to undertake such an additional inspection is left to the professional judgement of the competent authority.

Article 12 **Selection of ships for inspection**

The competent authority shall ensure that ships are selected for inspection on the basis of their risk profile as described in Annex I, Part I, and when overriding or unexpected factors arise in accordance with Annex I, Part II 2A and 2B.

With a view to the inspection of ships, the competent authority:

(a) shall select ships which are due for a mandatory inspection, referred to as 'Priority I' ships, in accordance with the selection scheme described in Annex I, Part II 3A;

(b) may select ships which are eligible for inspection, referred to as 'Priority II' ships, in accordance with Annex I, Part II 3B.

Article 13 **Initial and more detailed inspections**

Member States shall ensure that ships which are selected for inspection in accordance with Article 12 are subject to an initial inspection or a more detailed inspection as follows:

1. On each initial inspection of a ship, the competent authority shall ensure that the inspector, as a minimum:

(a) checks the certificates and documents listed in Annex IV required to be kept on board in accordance with Community maritime legislation and Conventions relating to safety and security;

(b) verifies, where appropriate, whether outstanding deficiencies found during the previous inspection carried out by a Member State or by a State signatory to the Paris MOU have been rectified;

(c) satisfies himself of the overall condition of the ship, including the hygiene of the ship, including engine room and accommodation.

2. When, after an inspection referred to in point 1, deficiencies to be rectified at the next port of call have been recorded in the inspection database, the competent authority of such next port may decide not to carry out the verifications referred to in point 1(a) and (c).

3. A more detailed inspection shall be carried out, including further checking of compliance with on-

board operational requirements, whenever there are clear grounds for believing, after the inspection referred to in point 1, that the condition of a ship or of its equipment or crew does not substantially meet the relevant requirements of a Convention.

'Clear grounds' shall exist when the inspector finds evidence which in his professional judgement warrants a more detailed inspection of the ship, its equipment or its crew.

Examples of 'clear grounds' are set out in Annex V.

Article 14 **Expanded inspections**

1. The following categories of ships are eligible to an expanded inspection in accordance with Annex I, Part II 3A and 3B:

— ships with a high risk profile,

— passenger ships, oil tankers, gas or chemical tankers or bulk carriers, older than 12 years of age,

— ships with a high risk profile or passenger ships, oil tankers, gas or chemical tankers or bulk carriers, older than 12 years of age, in cases of overriding or unexpected factors,

— ships subject to a re-inspection following a refusal of access order issued in accordance with Article 16.

2. The operator or master of the ship shall ensure that sufficient time is available in the operating schedule to allow the expanded inspection to be carried out.

Without prejudice to control measures required for security purposes, the ship shall remain in the port until the inspection is completed.

3. On receipt of a pre-notification provided by a ship eligible for a periodic expanded inspection, the competent authority shall inform the ship if no expanded inspection will be carried out.

4. The scope of an expanded inspection, including the risk areas to be covered, is set out in Annex VII. The Commission may adopt detailed measures to ensure uniform conditions for the application of Annex VII. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

Article 15 **Safety and security guidelines and procedures**

1. Member States shall ensure that their inspectors follow the procedures and guidelines specified in Annex VI.

2. As far as security checks are concerned, Member States shall apply the relevant procedures set out in Annex VI to this Directive to all ships referred to in Articles 3(1), 3(2) and 3(3) of Regulation (EC) No 725/2004 of the European Parliament and of the Council[1], calling at their ports and anchorages, unless they fly the flag of the port State of inspection.

3. The provisions of Article 14 of this Directive concerning expanded inspections shall apply to ro-ro ferries and high-speed passenger craft, referred to in Article 2(a) and (b) of Directive 1999/35/EC.

When a ship has been surveyed in accordance with Articles 6 and 8 of Directive 1999/35/EC by a host State which is not the flag State of the ship, such specific survey shall be recorded as a more detailed or an expanded inspection, as relevant, in the inspection database and taken into account for the purposes of Articles 10, 11 and 12 of this Directive and for calculating the fulfilment of the inspection commitment of each Member State in as much as all the items referred to in Annex VII to this Directive are covered.

Without prejudice to a prevention of operation of a ro-ro ferry or a high-speed passenger craft decided in accordance with Article 10 of Directive 1999/35/EC, the provisions of this Directive concerning rectification of deficiencies, detention, refusal of access, follow-up to inspections, detentions and refusal of access, as appropriate, shall apply.

[1] OJ L 129, 29.4.2004, p. 6.

4. The Commission may adopt detailed measures to ensure uniform application of the procedures referred to in paragraph 1 and of the security checks referred to in paragraph 2 of this Article. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

Article 16 **Access refusal measures concerning certain ships**

1. A Member State shall ensure that any ship which:

— flies the flag of a State whose detention rate falls into the black list, adopted in accordance with the Paris MOU on the basis of information recorded in the inspection database and as published annually by the Commission, and has been detained or has been issued with a prevention of operation order under Directive 1999/35/EC more than twice in the course of the preceding 36 months in a port or anchorage of a Member State or of a State signatory of the Paris MOU, or

— flies the flag of a State whose detention rate falls into the grey list, adopted in accordance with the Paris MOU on basis of information recorded in the inspection database and as published annually by the Commission, and has been detained or has been issued with a prevention of operation order under Directive 1999/35/EC more than twice in the course of the preceding 24 months in a port or anchorage of a Member State or of a State signatory of the Paris MOU, is refused access to its ports and anchorages, except in the situations described in Article 21(6).

Refusal of access shall become applicable as soon as the ship leaves the port or anchorage where it has been the subject of a third detention and where a refusal of access order has been issued.

2. The refusal of access order shall be lifted only after a period of three months has passed from the date of issue of the order and when the conditions in paragraphs 3 to 9 of Annex VIII are met.

If the ship is subject to a second refusal of access, the period shall be 12 months.

3. Any subsequent detention in a port or anchorage within the Community shall result in the ship being refused access to any port and anchorage within the Community. This third refusal of access order may be lifted after a period of 24 months has passed from the issue of the order and only if:

— the ship flies the flag of a State whose detention rate falls neither into the black list nor the grey list referred to in paragraph 1,

— the statutory and classification certificates of the ship are issued by an organisation or organisations recognised under Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 on common rules and standards for ship inspection and survey organisations (recast)[1],

— the ship is managed by a company with a high performance according to Annex I, Part I.1, and

— the conditions in paragraphs 3 to 9 of Annex VIII are met.

Any ship not meeting the criteria specified in this paragraph, after a period of 24 months has passed from the issue of the order, shall be permanently refused access to any port and anchorage within the Community.

4. Any subsequent detention in a port or anchorage within the Community after the third refusal of access shall result in the ship being permanently refused access to any port and anchorage within the Community.

5. For the purpose of this Article, Member States shall comply with the procedures laid down in Annex VIII.

Article 17 **Report of inspection to the master**

On completion of an inspection, a more detailed inspection or an expanded inspection, the inspector shall draw up a report in accordance with Annex IX. The ship's master shall be provided with a copy of the inspection report.

Where, following a more detailed inspection, the living and working conditions on the ship are found

[1] OJ L16, 31.12.2015, p.11

not to conform to the requirements of MLC 2006, the inspector shall forthwith bring the deficiencies to the attention of the master of the ship, with required deadlines for their rectification.

In the event that the inspector considers such deficiencies to be significant, or if they relate to a possible complaint under point 19 of Part A of Annex V, the inspector shall also bring the deficiencies to the attention of the appropriate seafarers' and shipowners' organisations in the Member State in which the inspection is carried out, and may:

(a) notify a representative of the flag State;

(b) provide the competent authorities of the next port of call with the relevant information.

In respect of matters concerning MLC 2006, the Member State in which the inspection is carried out shall have the right to transmit a copy of the inspector's report, to be accompanied by any reply received from the competent authorities of the flag State within the prescribed deadline, to the Director-General of the International Labour Office with a view to such action as may be considered appropriate and expedient in order to ensure that a record is kept of such information and that it is brought to the attention of parties who might be interested in availing themselves of relevant recourse procedures.

Article 18 **Complaints**

All complaints shall be subject to a rapid initial assessment by the competent authority. This assessment shall make it possible to determine whether a complaint is justified.
Should that be the case, the competent authority shall take the necessary action on the complaint, in particular, ensuring that anyone directly concerned by that complaint can make their views known.

Where the competent authority deems the complaint to be manifestly unfounded, it shall inform the complainant of its decision and of the reasons therefor.

The identity of the complainant shall not be revealed to the master or the shipowner of the ship concerned. The inspector shall take appropriate steps to safeguard the confidentiality of complaints made by seafarers, including ensuring confidentiality during any interviews of seafarers.

Member States shall inform the flag State administration, with a copy to the International Labour Organisation (ILO) if appropriate, of complaints not manifestly unfounded and of follow-up actions taken.

Article 18a **Onshore MLC 2006 complaint-handling procedures**

1. A complaint by a seafarer alleging a breach of the requirements of MLC 2006 (including seafarers' rights) may be reported to an inspector in the port at which the seafarer's ship has called. In such cases, the inspector shall undertake an initial investigation.

2. Where appropriate, given the nature of the complaint, the initial investigation shall include consideration of whether the on-board complaint procedures provided for under Regulation 5.1.5 of MLC 2006 have been pursued. The inspector may also conduct a more detailed inspection in accordance with Article 13 of this Directive.

3. The inspector shall, where appropriate, seek to promote a resolution of the complaint at the ship-board level.

4. In the event that the investigation or the inspection reveals a non- conformity that falls within the scope of Article 19, that Article shall apply.

5. Where paragraph 4 does not apply and a complaint by a seafarer related to matters covered by MLC 2006 has not been resolved at the ship-board level, the inspector shall forthwith notify the flag State, seeking, within a prescribed deadline, advice and a corrective plan of action to be submitted by the flag State. A report of any inspection carried out shall be transmitted by electronic means to the inspection database referred to in Article 24.

6. Where the complaint has not been resolved following action taken in accordance with paragraph 5, the port State shall transmit a copy of the inspector's report to the Director-General of the International Labour Office. The report shall be accompanied by any reply received within the prescribed deadline from the competent authority of the flag State. The appropriate seafarers' and shipowners' organisations in the

port State shall be similarly informed. In addition, statistics and information regarding complaints that have been resolved shall be regularly submitted by the port State to the Director-General of the International Labour Office.

Such submissions are provided in order that, on the basis of such action as may be considered appropriate and expedient, a record is kept of such information and brought to the attention of parties, including seafarers' and shipowners' organisations, which might be interested in availing themselves of relevant recourse procedures.

7. In order to ensure uniform conditions for the implementation of this Article, implementing powers shall be conferred on the Commission regarding the setting-up of a harmonised electronic format and procedure for the reporting of follow-up actions taken by Member States. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

8. This Article shall be without prejudice to Article 18. The fourth paragraph of Article 18 shall also apply to complaints relating to matters covered by MLC 2006.

Article 19 **Rectification and detention**

1. The competent authority shall be satisfied that any deficiencies confirmed or revealed by the inspection are, or will be, rectified in accordance with the Conventions.

2. In the case of deficiencies which are clearly hazardous to safety, health or the environment, the competent authority of the port State where the ship is being inspected shall ensure that the ship is detained or that the operation in the course of which the deficiencies are revealed is stopped. The detention order or stoppage of an operation shall not be lifted until the hazard is removed or until such authority establishes that the ship can, subject to any necessary conditions, proceed to sea or the operation be resumed without risk to the safety and health of passengers or crew, or risk to other ships, or without there being an unreasonable threat of harm to the marine environment.

2a. In the case of living and working conditions on board which are clearly hazardous to the safety, health or security of seafarers or deficiencies which constitute a serious or repeated breach of MLC 2006 requirements (including seafarers' rights), the competent authority of the port State where the ship is being inspected shall ensure that the ship is detained or that the operation in the course of which the deficiencies are revealed is stopped.

The detention order or stoppage of an operation shall not be lifted until those deficiencies have been rectified or if the competent authority has accepted a plan of action to rectify those deficiencies and it is satisfied that the plan will be implemented in an expeditious manner. Prior to accepting a plan of action, the inspector may consult the flag State.

3. When exercising his professional judgement as to whether or not a ship is to be detained, the inspector shall apply the criteria set out in Annex X.

4. If the inspection reveals that the ship is not equipped with a functioning voyage data recorder, when use of such recorder is compulsory in accordance with Directive 2002/59/EC, the competent authority shall ensure that the ship is detained.

If such deficiency cannot be readily rectified in the port of detention, the competent authority may either allow the ship to proceed to the appropriate repair yard nearest to the port of detention where it may be readily rectified or require the deficiency to be rectified within a maximum period of 30 days, as provided for in the guidelines developed by the Paris MOU. For these purposes, the procedures laid down in Article 21 shall apply.

5. In exceptional circumstances, where the overall condition of a ship is obviously substandard, the competent authority may suspend the inspection of that ship until the responsible parties take the steps necessary to ensure that it complies with the relevant requirements of the Conventions.

6. In the event of detention, the competent authority shall immediately inform, in writing and including

the report of inspection, the flag State administration or, when this is not possible, the Consul or, in his absence, the nearest diplomatic representative of that State, of all the circumstances in which intervention was deemed necessary. In addition, nominated surveyors or recognised organisations responsible for the issue of classification certificates or statutory certificates in accordance with Conventions shall also be notified where relevant. Moreover, if a ship is prevented from sailing due to serious or repeated breach of the requirements of MLC 2006 (including seafarers' rights) or due to the living and working conditions on board being clearly hazardous to the safety, health or security of seafarers, the competent authority shall forthwith notify the flag State accordingly and invite a representative of the flag State to be present, if possible, requesting the flag State to reply within a prescribed deadline. The competent authority shall also inform forthwith the appropriate seafarers' and shipowners' organisations in the port State in which the inspection was carried out.

7. This Directive shall be without prejudice to the additional requirements of the Conventions concerning notification and reporting procedures related to port State control.

8. When port State control is exercised under this Directive, all possible efforts shall be made to avoid a ship being unduly detained or delayed. If a ship is unduly detained or delayed, the owner or operator shall be entitled to compensation for any loss or damage suffered. In any instance of alleged undue detention or delay the burden of proof shall lie with the owner or operator of the ship.

9. In order to alleviate port congestion, a competent authority may allow a detained ship to be moved to another part of the port if it is safe to do so. However, the risk of port congestion shall not be a consideration when deciding on a detention or on a release from detention.

Port authorities or bodies shall cooperate with the competent authority with a view to facilitating the accommodation of detained ships.

10. The port authorities or bodies shall be informed at the earliest convenience when a detention order is issued.

Article 20 **Right of appeal**

1. The owner or operator of a ship or his representative in the Member State shall have a right of appeal against detention or refusal of access by the competent authority. An appeal shall not cause the detention or refusal of access to be suspended.

2. Member States shall establish and maintain appropriate procedures for this purpose in accordance with their national legislation.

3. The competent authority shall properly inform the master of a ship referred to in paragraph 1 of the right of appeal and the practical arrangements relating thereto.

4. When, as a result of an appeal or of a request made by the owner or the operator of a ship or his representative, a detention order or a refusal of access order is revoked or amended:

(a) Member States shall ensure that the inspection database is amended accordingly without delay;

(b) the Member State where the detention order or refusal of access order is issued shall, within 24 hours of such a decision, ensure that the information published in accordance with Article 26 is rectified.

Article 21 **Follow-up to inspections and detentions**

1. Where deficiencies referred to in Article 19(2) cannot be rectified in the port of inspection, the competent authority of that Member State may allow the ship concerned to proceed without undue delay to the appropriate repair yard nearest to the port of detention, as chosen by the master and the authorities concerned, where follow-up action can be taken, provided that the conditions determined by the competent authority of the flag State and agreed by that Member State are complied with. Such conditions shall ensure that the ship can proceed without risk to the safety and health of passengers or crew, or risk to other ships, or without there being an unreasonable threat of harm to the marine environment.

2. Where the decision to send a ship to a repair yard is due to a lack of compliance with IMO Resolution A. 744(18), either with respect to a ship's documentation or with respect to a ship's structural failures and deficiencies, the competent authority may require that the necessary thickness measurements be carried out in the port of detention before the ship is allowed to sail.

3. In the circumstances referred to in paragraph 1, the competent authority of the Member State in the port of inspection shall notify the competent authority of the State where the repair yard is situated, the parties mentioned in Article 19(6) and any other authority as appropriate of all the conditions for the voyage.

The competent authority of a Member State receiving such notification shall inform the notifying authority of the action taken.

4. Member States shall take measures to ensure that access to any port or anchorage within the Community is refused to ships referred to in paragraph 1 which proceed to sea:

(a) without complying with the conditions determined by the competent authority of any Member State in the port of inspection; or

(b) which refuse to comply with the applicable requirements of the Conventions by not calling into the indicated repair yard.

Such refusal shall be maintained until the owner or operator provides evidence to the satisfaction of the competent authority of the Member State where the ship was found defective, demonstrating that the ship fully complies with all applicable requirements of the Conventions.

5. In the circumstances referred to in paragraph 4(a), the competent authority of the Member State where the ship was found defective shall immediately alert the competent authorities of all the other Member States.

In the circumstances referred to in paragraph 4(b), the competent authority of the Member State in which the repair yard lies shall immediately alert the competent authorities of all the other Member States.

Before denying entry, the Member State may request consultations with the flag administration of the ship concerned.

6. By way of derogation from the provisions of paragraph 4, access to a specific port or anchorage may be permitted by the relevant authority of that port State in the event of *force majeure* or overriding safety considerations, or to reduce or minimise the risk of pollution or to have deficiencies rectified, provided that adequate measures to the satisfaction of the competent authority of such Member State have been implemented by the owner, the operator or the master of the ship to ensure safe entry.

Article 22 **Professional profile of inspectors**

1. Inspections shall be carried out only by inspectors who fulfil the qualification criteria specified in Annex XI and who are authorised to carry out port State control by the competent authority.

2. When the required professional expertise cannot be provided by the competent authority of the port State, the inspector of that competent authority may be assisted by any person with the required expertise.

3. The competent authority, the inspectors carrying out port State control and the persons assisting them shall have no commercial interest either in the port of inspection or in the ships inspected, nor shall the inspectors be employed by, or undertake work on behalf of, non-governmental organisations which issue statutory and classification certificates or which carry out the surveys necessary for the issue of those certificates to ships.

4. Each inspector shall carry a personal document in the form of an identity card issued by his competent authority in accordance with Commission Directive 96/40/EC of 25 June 1996 establishing a common model for an identity card for inspectors carrying out port State control[2].

2 OJ L-196, 7.8.1996, p. 8.

5. Member States shall ensure that the competence of inspectors and their compliance with the minimum criteria referred to in Annex XI are verified, before authorising them to carry out inspections and periodically thereafter in the light of the training scheme referred to in paragraph 7.

6. Member States shall ensure that inspectors receive appropriate training in relation to changes to the port State control system applied in the Community as laid down in this Directive and amendments to the Conventions.

7. In cooperation with Member States, the Commission shall develop and promote a harmonised Community scheme for the training and assessment of competences of port State control inspectors by Member States.

Article 23 **Reports from pilots and port authorities**

1. Member States shall take appropriate measures to ensure that their pilots engaged on the berthing or unberthing of ships or engaged on ships bound for a port or in transit within a Member State immediately inform the competent authority of the port State or the coastal State, as appropriate, whenever they learn in the course of their normal duties that there are apparent anomalies which may prejudice the safe navigation of the ship, or which may pose a threat of harm to the marine environment.

2. If port authorities or bodies, in the course of their normal duties, learn that a ship within their port has apparent anomalies which may prejudice the safety of the ship or poses an unreasonable threat of harm to the marine environment, such authority or body shall immediately inform the competent authority of the port State concerned.

3. Member States shall require pilots and port authorities or bodies to report at least the following information, in electronic format whenever possible:

— ship information (name, IMO identification number, call sign and flag),
— sailing information (last port of call, port of destination),
— description of apparent anomalies found on board.

4. Member States shall ensure that proper follow-up action is taken on apparent anomalies notified by pilots and port authorities or bodies and shall record the details of action taken.

5. Implementing powers shall be conferred on the Commission to adopt measures for the implementation of this Article, including harmonised procedures for the reporting of apparent anomalies by pilots and port authorities or bodies and of follow-up actions taken by Member States. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

Article 24 **Inspection database**

1. The Commission shall develop, maintain and update the inspection database, building upon the expertise and experience under the Paris MOU.

The inspection database shall contain all the information required for the implementation of the inspection system set up under this Directive and shall include the functionalities set out in Annex XII.

2. Member States shall take the appropriate measures to ensure that the information on the actual time of arrival and the actual time of departure of any ship calling at their ports and anchorages, together with an identifier of the port concerned, is transferred within a reasonable time to the inspection database through the Community maritime information exchange system 'SafeSeaNet' referred to in Article 3(s) of Directive 2002/59/EC. Once they have transferred such information to the inspection database through SafeSeaNet, Member States are exempted from the provision of data in accordance with paragraphs 1.2 and 2(a) and (b) of Annex XIV to this Directive.

3. Member States shall ensure that the information related to inspections performed in accordance with this Directive is transferred to the inspection database as soon as the inspection report is completed or the detention lifted.

Within 72 hours, Member States shall ensure that the information transferred to the inspection database is validated for publication purposes.

4. On the basis of the inspection data provided by Member States, the Commission shall be able to retrieve from the inspection database any relevant data concerning the implementation of this Directive, in particular on the risk profile of the ship, on ships' due for inspections, on ships' movement data and on the inspection commitments of each Member State.

Member States shall have access to all the information recorded in the inspection database which is relevant for implementing the inspection procedures of this Directive.

Member States and third signatories to the Paris MOU shall be granted access to any data they have recorded in the inspection database and to data on ships flying their flag.

Article 25 **Exchange of information and cooperation**

Each Member State shall ensure that its port authorities or bodies and other relevant authorities or bodies provide the competent port State control authority with the following types of information in their possession:

— information notified in accordance with Article 9 and Annex III,

— information concerning ships which have failed to notify any information according to the requirements of this Directive, and to Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues[1] and Directive 2002/59/EC, as well as, if appropriate, with Regulation (EC) No 725/2004,

— information concerning ships which have proceeded to sea without having complied with Articles 7 or 10 of Directive 2000/59/EC,

— information concerning ships which have been denied entry or expelled from port on security grounds,

— information on apparent anomalies in accordance with Article 23.

Article 26 **Publication of information**

The Commission shall make available and maintain on a public website the information on inspections, detentions and refusals of access in accordance with Annex XIII, building upon the expertise and experience under the Paris MOU.

Article 27 **Publication of a list of companies with a low and very low performance**

The Commission shall establish and publish regularly on a public website information relating to companies whose performance, in view of determining the ship risk profile referred to in Annex I Part I, has been considered as low and very low for a period of three months or more.

Implementing powers shall be conferred on the Commission to establish the detailed arrangements for publication of the information referred to in the first paragraph, the criteria for aggregating the relevant data and the frequency of updates. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 31(3).

Article 28 **Reimbursement of costs**

1. Should the inspections referred to in Articles 13 and 14 confirm or reveal deficiencies in relation to the requirements of a Convention warranting the detention of a ship, all costs relating to the inspections in any normal accounting period shall be covered by the shipowner or the operator or by his representative in the port State.

2. All costs relating to inspections carried out by the competent authority of a Member State under the provisions of Articles 16 and 21(4) shall be charged to the owner or operator of the ship.

3. In the case of detention of a ship, all costs relating to the detention in port shall be borne by the owner or operator of the ship.

[1] OJ L 332, 28.12.2000, p. 81.

4. The detention shall not be lifted until full payment is made or a sufficient guarantee is given for reimbursement of the costs.

Article 29 **Data to monitor implementation**

Member States shall provide the Commission with the information listed in Annex XIV at the intervals stated in that Annex.

Article 30 **Monitoring of compliance and performance of Member States**

In order to ensure the effective implementation of this Directive and to monitor the overall functioning of the Community's port State control regime in accordance with Article 2(b)(i) of Regulation (EC) No 1406/2002, the Commission shall collect the necessary information and carry out visits to Member States.

Article 30a **Delegated acts**

The Commission shall be empowered to adopt delegated acts in accordance with Article 30b, concerning amendments to Annex VI, in order to add to the list set out in that Annex further instructions relating to port State control adopted by the Paris MOU Organisation.

Article 30b **Exercise of the delegation**

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.

2. The power to adopt delegated acts referred to in Article 30a shall be conferred on the Commission for a period of five years from 20 August 2013. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.

3. The delegation of power referred to in Article 30a may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

5. A delegated act adopted pursuant to Article 30a shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

Article 31 **Committee**

1. The Commission shall be assisted by the Committee on Safe Seas and the Prevention of Pollution from Ships (COSS) established by Article 3 of Regulation (EC) No 2099/2002 of the European Parliament and the Council[1]. That Committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply.

Where the committee delivers no opinion on a draft implementing act to be adopted pursuant to Articles 10(3), 23(5) and the second paragraph of Article 27 respectively, the Commission shall not adopt the draft implementing act and the third subparagraph of Article 5(4) of Regulation (EU) No 182/2011 shall apply.

[1] OJ L 324, 29.11.2002, p. 1.

Article 33 **Implementing rules**

When establishing the implementing rules referred to in Articles 10(3), 14(4), 15(4), 18a(7), 23(5) and 27 in accordance with the procedures referred to in Article 31(3), the Commission shall take specific care that those rules take into account the expertise and experience gained with the inspection system in the Union and build upon the expertise of the Paris MOU.

Article 34 **Penalties**

Member States shall lay down a system of penalties for the breach of national provisions adopted pursuant to this Directive and shall take all the measures necessary to ensure that those penalties are applied. The penalties provided for shall be effective, proportionate and dissuasive.

Article 35 **Review**

The Commission shall review the implementation of this Directive no later than 30 June 2012. The review will examine, inter alia, the fulfilment of the overall Community inspection commitment laid down in Article 5, the number of port State control inspectors in each Member State, the number of inspections carried out, and the compliance with the annual inspection commitment by each Member State and the implementation of Articles 6, 7 and 8.

The Commission shall communicate the findings of the review to the European Parliament and the Council and shall determine on the basis of the review whether it is necessary to propose an amending Directive or further legislation in this area.

Article 36 **Implementation and notification**

1. Member States shall adopt and publish, by 31 December 2010, the laws, regulations and administrative provisions necessary to comply with this Directive.

They shall apply those provisions from 1 January 2011.

2. When Member States adopt those measures, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. They shall also include a statement that references in existing laws, regulations and administrative provisions to the Directive repealed by this Directive shall be construed as references to this Directive. Member States shall determine how such reference is to be made and how that statement is to be formulated.

3. Member States shall communicate to the Commission the text of the main provisions of national law adopted in the field covered by this Directive.

4. In addition, the Commission shall inform the European Parliament and the Council on a regular basis of progress in the implementation of this Directive within the Member States, in particular with a view to a uniform application of the inspection system in the Community.

Article 37 **Repeal**

Directive 95/21/EC, as amended by the Directives listed in Annex XV, Part A, is hereby repealed, with effect from 1 January 2011, without prejudice to the obligations of Member States relating to the time limits for transposition into national law of the Directives set out in Annex XV, Part B.

References to the repealed Directive shall be construed as references to this Directive and shall be read in accordance with the correlation table set out in Annex XVI to this Directive.

Article 38 **Entry into force**

This Directive shall enter into force on the 20th day following its publication in the *Official Journal of the European Union*.

Article 39 **Addressees**

This Directive is addressed to the Member States.

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ANNEX I - ELEMENTS OF THE COMMUNITY PORT STATE INSPECTION SYSTEM (referred to in Article 5)

The following elements shall be included in the Community Port State Inspection System:

I. Ship risk profile

The risk profile of a ship shall be determined by a combination of the following generic and historical parameters:

1. Generic parameters

(a) Type of ship

Passenger ships, oil and chemical tankers, gas carriers and bulk carriers shall be considered as posing a higher risk.

(b) Age of ship

Ships of more than 12 years old shall be considered as posing a higher risk.

(c) Flag State performance

(i) Ships flying the flag of a State with a high detention rate within the Community and the Paris MOU region shall be considered as posing a higher risk.

(ii) Ships flying the flag of a State with a low detention rate within the Community and the Paris MOU region shall be considered as posing a lower risk.

(iii) Ships flying the flag of a State for which an audit has been completed and, where relevant, a corrective action plan submitted, both in accordance with the Framework and procedures for the Voluntary IMO Member State Audit Scheme shall be considered as posing a lower risk. As soon as the measures referred to in Article 10(3) are adopted, the flag State of such a ship shall demonstrate compliance with the Code for the implementation of mandatory IMO instruments.

(d) Recognised organisations

(i) Ships which have been delivered certificates from recognised organisations having a low or very low performance level in relation with their detention rates within the Community and the Paris MOU region shall be considered as posing a higher risk.

(ii) Ships which have been delivered certificates from recognised organisations having a high performance level in relation with their detention rates within the Community and the Paris MOU region shall be considered as posing a lower risk.

(iii) Ships with certificates issued by organisations recognised under the terms of Regulation (EC) No 391/2009.

(e) Company performance

(i) Ships of a company with a low or very low performance as determined by its ships' deficiency and detention rates within the Community and the Paris MOU region shall be considered as posing a higher risk.

(ii) Ships of a company with a high performance as determined by its ships' deficiency and detention rates within the Community and the Paris MOU region shall be considered as posing a lower risk.

2. Historical parameters

(i) Ships which have been detained more than once shall be considered as posing a higher risk.

(ii) Ships which, during inspection(s) carried out within the period referred to in Annex II have had less than the number of deficiencies referred to in Annex II, shall be considered as posing a lower risk.

(iii) Ships which have not been detained during the period referred to in Annex II, shall be considered as posing a lower risk.

The risk parameters shall be combined by using a weighting which reflects the relative influence of each parameter on the overall risk of the ship in order to determine the following ship risk profiles:

— high risk,
— standard risk,
— low risk.

In determining these risk profiles greater emphasis shall be given to the parameters for type of ship, flag State performance, recognised organisations and company performance.

II. Inspection of ships

1. Periodic inspections

Periodic inspections shall be carried out at predetermined intervals. Their frequency shall be determined by the ship risk profile. The interval between periodic inspections of high risk ships shall not exceed six months. The interval between periodic inspections of ships of other risk profiles shall increase as the risk decreases.

Member States shall carry out a periodic inspection on:

— Any ship with a high risk profile which has not been inspected in a port or anchorage within the Community or of the Paris MOU region during the last six months. High risk ships become eligible for inspection as from the fifth month.

— Any ship with a standard risk profile which has not been inspected in a port or anchorage within the Community or of the Paris MOU region during the last 12 months. Standard risk ships become eligible for inspection as from the 10th month.

— Any ship with a low risk profile which has not been inspected in a port or anchorage within the Community or of the Paris MOU region during the last 36 months. Low risk ships become eligible for inspection as from the 24th month.

2. Additional inspections

Ships, to which the following overriding or unexpected factors apply, are subject to an inspection regardless of the period since their last periodic inspection. However, the need to undertake an additional inspection on the basis of unexpected factors is left to the professional judgement of the inspector.

2A. Overriding factors

Ships to which the following overriding factors apply shall be inspected regardless of the period since their last periodic inspection:

— Ships which have been suspended or withdrawn from their class for safety reasons since the last inspection in the Community or in the Paris MOU region.
— Ships which have been the subject of a report or notification by another Member State.
— Ships which cannot be identified in the inspection database.
— Ships which:
  — have been involved in a collision, grounding or stranding on their way to the port,
  — have been accused of an alleged violation of the provisions on discharge of harmful substances or effluents, or
  — have manoeuvred in an erratic or unsafe manner whereby routing measures, adopted by the IMO, or safe navigation practices and procedures have not been followed.

2B. Unexpected factors

Ships to which the following unexpected factors apply may be subject to inspection regardless of the period since their last periodic inspection. The decision to undertake such an additional inspection is left to the professional judgement of the competent authority:

— Ships which have not complied with the applicable version of IMO Recommendation on navigation through the entrances to the Baltic Sea.
— Ships carrying certificates issued by a formerly recognised organisation whose recognition has been withdrawn since the last inspection in the Community or in the Paris MOU region.
— Ships which have been reported by pilots or port authorities or bodies as having apparent anomalies which may prejudice their safe navigation or pose a threat of harm to the environment in accordance with Article 23 of this Directive.

— Ships which have failed to comply with the relevant notification requirements referred to in Article 9 of this Directive, in Directive 2000/59/EC, Directive 2002/59/EC and if appropriate in Regulation (EC) No 725/2004.
— Ships which have been the subject of a report or complaint, including an onshore complaint, by the master, a crew member, or any person or organisation with a legitimate interest in the safe operation of the ship, on-board living and working conditions or the prevention of pollution, unless the Member State concerned deems the report or complaint to be manifestly unfounded.
— Ships which have been previously detained more than three months ago.
— Ships which have been reported with outstanding deficiencies, except those for which deficiencies had to be rectified within 14 days after departure, and for deficiencies which had to be rectified before departure.
— Ships which have been reported with problems concerning their cargo, in particular noxious and dangerous cargoes.
— Ships which have been operated in a manner posing a danger to persons, property or the environment.
— Ships where information from a reliable source became known, to the effect that their risk parameters differ from those recorded and the risk level is thereby increased.
— Ships for which a plan of action to rectify deficiencies as referred to in Article 19(2a) has been agreed but in respect of which the implementation of that plan has not been checked by an inspector.

3. Selection scheme

3A. Priority I ships shall be inspected as follows:

(a) An expanded inspection shall be carried out on:

— any ship with a high risk profile not inspected in the last six months,

— any passenger ship, oil tanker, gas or chemical tanker or bulk carrier, older than 12 years of age, with a standard risk profile not inspected in the last 12 months.

(b) An initial or a more detailed inspection, as appropriate, shall be carried out on:

— any ship other than a passenger ship, an oil tanker, a gas or chemical tanker or a bulk carrier, older than 12 years of age, with a standard risk profile not inspected in the last 12 months.

(c) In case of an overriding factor:

— A more detailed or an expanded inspection, according to the professional judgement of the inspector, shall be carried out on any ship with a high risk profile and on any passenger ship, oil tanker, gas or chemical tanker or bulk carrier, older than 12 years of age.

— A more detailed inspection shall be carried out on any ship other than a passenger ship, an oil tanker, a gas or chemical tanker or a bulk carrier, older than 12 years of age.

3B. Where the competent authority decides to inspect a Priority II ship, the following shall apply:

(a) An expanded inspection shall be carried out on:

— any ship with a high risk profile not inspected in the last five months,

— any passenger ship, oil tanker, gas or chemical tanker or bulk carrier, older than 12 years of age, with a standard risk profile not inspected in the last 10 months, or

— any passenger ship, oil tanker, gas or chemical tanker or bulk carrier, older than 12 years of age, with a low risk profile not inspected in the last 24 months.

(b) An initial or a more detailed inspection, as appropriate, shall be carried out on:

— any ship other than a passenger ship, an oil tanker, a gas or chemical tanker or a bulk carrier, older than 12 years of age, with a standard risk profile not inspected in the last 10 months, or

— any ship other than a passenger ship, an oil tanker, a gas or chemical tanker or a bulk carrier, older than 12 years of age, with a low risk profile not inspected in the last 24 months.

(c) In case of an unexpected factor:

— a more detailed or an expanded inspection according to the professional judgement of the inspector, shall be carried out on any ship with a high risk profile or any passenger ship, oil tanker, gas or chemical tanker or bulk carrier, older than 12 years of age,

— a more detailed inspection shall be carried out on any ship other than a passenger ship, an oil tanker, a gas or chemical tanker or a bulk carrier, older than 12 years of age.

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ANNEX II - DESIGN OF SHIP RISK PROFILE
(referred to in Article 10(2))

				Profile			
				High Risk Ship (HRS)		Standard Risk Ship (SRS)	Low Risk Ship (LRS)
Generic parameters				Criteria	Weighting points	Criteria	Criteria
1	Type of ship			Chemical tankship Gas Carrier Oil tankship Bulk carrier Passenger ship	2	Neither a high risk nor a low risk ship	All types
2	Age of ship			All types > 12 y	1		All ages
3a	Flag	BGW-list		Black – VHR, HR, M to HR	2		White
				Black - MR	1		
3b		IMO-Audit		-	-		Yes
4a	Recognized Organization	Performance	H	-	-		High
			M	-	-		-
			L	Low	1		-
			VL	Very Low			-
4b		EU recognized		-	-		Yes
5	Company	Performance	H	-	-		High
			M	-	-		-
			L	Low	2		-
			VL	Very Low			-
Historic Parameters							
6	Number of def. recorded in each insp. within previous 36 months		Deficiencies	Not eligible	-		≤ 5 (and at least one inspection carried out in previous 36 months)
7	Number of detentions within previous 36 months		Detentions	≥ 2 detentions	1		No detention

HRS are ships which meet criteria to a total value of 5 or more weighting points.
LRS are ships which meet all the criteria of the Low Risk parameters.
SRS are ships which are neither HRS nor LRS.

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ANNEX III - NOTIFICATION
(referred to in Article 9(1))

Information to be provided in accordance with Article 9(1):

The information listed below shall be submitted to the port authority or body or to the authority or body designated for that purpose at least three days before the expected time of arrival in the port or anchorage or before leaving the previous port or anchorage if the voyage is expected to take fewer than three days:

(a) ship identification (name, call sign, IMO identification number or MMSI number);
(b) planned duration of the call;
(c) for tankers:
  (i) configuration: single hull, single hull with SBT, double hull;
  (ii) condition of the cargo and ballast tanks: full, empty, inerted;
  (iii) volume and nature of the cargo;
(d) planned operations at the port or anchorage of destination (loading, unloading, other);
(e) planned statutory survey inspections and substantial maintenance and repair work to be carried out whilst in the port of destination;
(f) date of last expanded inspection in the Paris MOU region.

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ANNEX IV - LIST OF CERTIFICATES AND DOCUMENTS
(referred to in Article 13(1))

1. International Tonnage Certificate (1969).
2. — Passenger Ship Safety Certificate,
   — Cargo Ship Safety Construction Certificate,
   — Cargo Ship Safety Equipment Certificate,
   — Cargo Ship Safety Radio Certificate,
   — Exemption certificate, including, where appropriate, the list of cargoes,
   — Cargo Ship Safety Certificate.
3. International Ship Security Certificate (ISSC).
4. Continuous Synopsis Record.
5. International Certificate of Fitness for Carriage of Liquefied Gases in Bulk;
   — Certificate of Fitness for the Carriage of Liquefied Gases in Bulk.
6. International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk;
   — Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.
7. International Oil Pollution Prevention Certificate.
8. International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk.
9. International Load Line Certificate (1966);
   — International Load Line Exemption Certificate.
10. Oil record book, parts I and II.
11. Cargo record book.
12. Minimum Safe Manning Document.
13. Certificates or any other documents required in accordance with the provisions of the STCW 78/95.
14. Medical certificates (see MLC 2006).
15. Table of shipboard working arrangements (see MLC 2006 and STCW 78/95).
16. Records of hours of work and rest of seafarers (see MLC 2006).
17. Stability information.
18. Copy of the Document of Compliance and the Safety Management Certificate issued, in accordance with the International Management Code for the Safe Operation of Ships and for Pollution Prevention

(SOLAS 74, Chapter IX).

19. Certificates as to the ship's hull strength and machinery installations issued by the recognised organisation in question (only to be required if the ship maintains its class with a recognised organisation).

20. Document of compliance with the special requirements for ships carrying dangerous goods.

21. High speed craft safety certificate and permit to operate high speed craft.

22. Dangerous goods special list or manifest, or detailed stowage plan.

23. Ship's log book with respect to the records of tests and drills, including security drills, and the log for records of inspection and maintenance of lifesaving appliances and arrangements and of fire fighting appliances and arrangements.

24. Special purpose ship safety certificate.

25. Mobile offshore drilling unit safety certificate.

26. For oil tankers, the record of oil discharge monitoring and control system for the last ballast voyage.

27. The muster list, fire control plan, and for passenger ships, a damage control plan.

28. Shipboard oil pollution emergency plan.

29. Survey report files (in case of bulk carriers and oil tankers).

30. Reports of previous port State control inspections.

31. For ro ro passenger ships, information on the A/A maximum ratio.

32. Document of authorisation for the carriage of grain.

33. Cargo securing manual.

34. Garbage management plan and garbage record book.

35. Decision support system for masters of passenger ships.

36. SAR cooperation plan for passenger ships trading on fixed routes.

37. List of operational limitations for passenger ships.

38. Bulk carrier booklet.

39. Loading and unloading plan for bulk carriers.

40. Certificate of insurance or any other financial security in respect of civil liability for oil pollution damage (International Convention on Civil Liability for Oil Pollution Damage, 1992).

41. Certificates required under Directive 2009/20/EC of the European Parliament and of the Council of 23 April 2009 on the insurance of shipowners for maritime claims[1].

42. Certificate required under Regulation (EC) No 392/2009 of the European Parliament and of the Council of 23 April 2009 on the liability of carriers of passengers by sea in the event of accidents[2].

43. International Air Pollution Prevention Certificate.

44. International Sewage Pollution Prevention Certificate.

45. Maritime labour certificate.

46. Declaration of maritime labour compliance, parts I and II.

47. International Anti-Fouling System Certificate.

48. Certificate of insurance or other financial security in respect of civil liability for bunker oil pollution damage.

49. A certificate on the inventory of hazardous materials or a statement of compliance as applicable pursuant to Regulation (EU) No 1257/2013 of the European Parliament and of the Council[3].

50. Document of Compliance issued under Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC[4].

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1 OJ L 16, 31.12.2015, p. 128

2 OJ L 16, 31.12.2015, p.24

3 Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC (OJ L 330, 10.12.2013, p. 1).

4 OJ L 123, 19.5.2015, p. 55.

ANNEX V - EXAMPLES OF "CLEAR GROUNDS" (referred to in Article 13(3))

A. Examples of clear grounds for a more detailed inspection

1. Ships identified in Annex I, Part II 2A and 2B.

2. The oil record book has not been properly kept.

3. During examination of the certificates and other documentation, inaccuracies have been revealed.

4. Indications that the crew members are unable to comply with the requirements related to on-board communication set out in Article 18 of Directive 2008/106/EC of the European Parliament and of the Council of 19 November 2008 on the minimum level of training of seafarers[1].

5. A certificate has been fraudulently obtained or the holder of a certificate is not the person to whom that certificate was originally issued.

6. The ship has a master, officer or rating holding a certificate issued by a country which has not ratified the STCW 78/95.

7. Evidence of cargo and other operations not being conducted safely, or in accordance with IMO guidelines, e.g. the content of oxygen in the inert- gas main supply to the cargo tanks is above the prescribed maximum level.

8. Failure of the master on an oil tanker to produce the record of the oil discharge monitoring and control system for the last ballast voyage.

9. Absence of an up-to-date muster list, or crew members not aware of their duties in the event of fire or an order to abandon the ship.

10. The emission of false distress alerts not followed by proper cancellation procedures.

11. The absence of principal equipment or arrangements required by the Conventions.

12. Excessively unsanitary conditions on board the ship.

13. Evidence from the inspector's general impression and observations that serious hull or structural deterioration or deficiencies exist that may place at risk the structural, watertight or weathertight integrity of the ship.

14. Information or evidence that the master or crew is not familiar with essential shipboard operations relating to the safety of ships or the prevention of pollution, or that such operations have not been carried out.

15. The absence of a table of shipboard working arrangements or of records of hours of work or rest of seafarers.

16. The documents required under MLC 2006 are not produced or maintained or are falsely maintained or the documents produced do not contain the information required by MLC 2006 or are otherwise invalid.

17. The living and working conditions on the ship do not conform to the requirements of MLC 2006.

18. There are reasonable grounds to believe that the ship has changed flag for the purpose of avoiding compliance with MLC 2006.

19. There is a complaint alleging that specific living and working conditions on the ship do not conform to the requirements of MLC 2006.

B. Examples of clear grounds for the control of ships on security aspects

1. The inspector may establish clear grounds for further control measures on security during the initial PSC inspection as follows:

1.1. ISSC is not valid or it has expired.

1.2. The ship is at a lower security level than the port.

1.3. Drills related to the security of the ship have not been carried out.

[1] OJ L 323, 3.12.2008, p. 33.

1.4. Records for the last 10 ship/port or ship/ship interfaces are incomplete.

1.5. Evidence or observation that key members of the ship's personnel cannot communicate with each other.

1.6. Evidence from observations that serious deficiencies exist in security arrangements.

1.7. Information from third parties such as a report or a complaint concerning security-related information.

1.8. The ship holds a subsequent, consecutively issued Interim International Ship Security Certificate (ISSC) and in the professional judgement of the inspector one of the purposes of the ship or company in requesting such a certificate is to avoid full compliance with SOLAS 74 Chapter XI-2 and Part A of the ISPS Code, beyond the period of the initial Interim Certificate. ISPS Code Part A specify the circumstances when an Interim Certificate may be issued.

2. If clear grounds as described above are established, the inspector shall immediately inform the competent security authority (unless the inspector is also an Officer Duly Authorised for Security). The competent security authority shall then decide on what further control measures are necessary taking into account the security level in accordance with Regulation 9 of SOLAS 74, Chapter XI.

3. Clear grounds other than those above are a matter for the Officer Duly Authorised for Security.

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ANNEX VI - PROCEDURES FOR THE CONTROL OF SHIPS
(referred to in Article 15(1))

Annex I, 'Port State Control Procedures', to the Paris MOU and the following instructions from the Paris MOU, in their up-to-date version:

— Instruction 33/2000/02: Operational Control on Ferries and Passenger Ships,

— Instruction 35/2002/02: Guidelines for PSCOs on Electronic Charts,

— Instruction 36/2003/08: Guidance for Inspection on Working and Living Conditions,

— Instruction 37/2004/02: Guidelines in Compliance with STCW 78/95 Convention as Amended,

— Instruction 37/2004/05: Guidelines on the Inspection of Hours of Work/Rest,

— Instruction 37/2004/10: Guidelines for Port State Control Officers on Security Aspects,

— Instruction 38/2005/02: Guidelines for PSCO's Checking a Voyage Data Recorder (VDR),

— Instruction 38/2005/05: Guidelines on MARPOL 73/78 Annex I,

— Instruction 38/2005/07: Guidelines on Control of the Condition Assessment Scheme (CAS) of Single Hull Oil Tankers,

— Instruction 39/2006/01: Guidelines for the Port State Control Officer on the ISM-Code,

— Instruction 39/2006/02: Guidelines for Port State Control Officers on Control of GMDSS,

— Instruction 39/2006/03: Optimisation of Banning and Notification Checklist,

— Instruction 39/2006/10: Guidelines for PSCOs for the Examination of Ballast Tanks and Main Power Failure Simulation (black-out test),

— Instruction 39/2006/11: Guidance for Checking the Structure of Bulk Carriers,

— Instruction 39/2006/12: Code of Good Practice for Port State Control Officers,

— Instruction 40/2007/04: Criteria for Responsibility Assessment of Recognised Organisations (R/O),

— Instruction 40/2007/09: Guidelines for Port State Control Inspections for Compliance with Annex VI of MARPOL 73/78.

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ANNEX VII - EXPANDED INSPECTIONS OF SHIPS
(referred to in Article 14)

An expanded inspection concerns in particular the overall condition of the following risk areas:

— Documentation.
— Structural condition.
— Weathertight condition.
— Emergency systems.
— Radio communication.
— Cargo operations.
— Fire safety.
— Alarms.
— Living and working conditions.
— Navigation equipment.
— Life saving appliances.
— Dangerous goods.
— Propulsion and auxiliary machinery.
— Pollution prevention.

In addition, subject to their practical feasibility or any constraints relating to the safety of persons, the ship or the port, an expanded inspection shall include the verification of specific items of risk areas depending on the type of vessel inspected, as established in accordance with Article 14(3).

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ANNEX VIII - PROVISIONS CONCERNING REFUSAL OF ACCESS TO PORTS AND ANCHORAGES WITHIN THE COMMUNITY
(referred to in Article 16)

1. If the conditions described in Article 16(1) are met, the competent authority of the port in which the ship is detained for the third time shall inform the master of the ship in writing that a refusal of access order will be issued which will become applicable immediately after the ship has left the port. The refusal of access order shall become applicable immediately after the ship has left the port after the deficiencies leading to the detention have been remedied.

2. The competent authority shall send a copy of the refusal of access order to the flag State administration, the recognised organisation concerned, the other Member States, and the other signatories to the Paris MOU, the Commission and the Paris MOU Secretariat. The competent authority shall also update the inspection database with information on the refusal of access without delay.

3. In order to have the refusal of access order lifted, the owner or the operator must address a formal request to the competent authority of the Member State that imposed the refusal of access order. This request must be accompanied by a document from the flag State administration issued following an on-board visit by a surveyor duly authorised by the flag State administration, showing that the ship fully conforms to the applicable provisions of the Conventions. The flag State administration shall provide evidence to the competent authority that a visit on board has taken place.

4. The request for the lifting of the refusal of access order must also be accompanied, where appropriate, by a document from the classification society which has the ship in class following an on-board visit by a surveyor from the classification society, showing that the ship conforms to the class standards stipulated by that society. The classification society shall provide evidence to the competent authority that a visit on board has taken place.

5. The refusal of access order may be lifted only after the period referred to Article 16 of this Directive has elapsed and following a re-inspection of the ship at an agreed port.

If the agreed port is located in a Member State, the competent authority of that State may, at the request of the competent authority which issued the refusal of access order, authorise the ship to enter the agreed port in order to carry out the re-inspection. In such cases, no cargo operations shall take place at the port until the refusal of access order has been lifted.

6. If the detention which led to the issue of a refusal of access order included deficiencies in the ship's structure, the competent authority which issued the refusal of access order may require that certain spaces, including cargo spaces and tanks, are made available for examination during the re- inspection.

7. The re-inspection shall be carried out by the competent authority of the Member State that imposed the refusal of access order, or by the competent authority of the port of destination with the agreement of the competent authority of the Member State that imposed the refusal of access order. The competent authority may require up to 14 days' notice for the re-inspection. Evidence shall be provided to the satisfaction of this Member State that the ship fully complies with the applicable requirements of the Conventions.

8. The re-inspection shall consist of an expanded inspection that must cover at least the relevant items of Annex VII.

9. All costs of this expanded inspection will be borne by the owner or the operator.

10. If the results of the expanded inspection satisfy the Member State in accordance with Annex VII, the refusal of access order must be lifted and the company of the ship informed thereof in writing.

11. The competent authority shall also notify its decision in writing to the flag State administration, the classification society concerned, the other Member States, the other signatories to the Paris MOU, the Commission and the Paris MOU Secretariat. The competent authority must also update the inspection database with information on the removal of the access without delay.

12. Information relating to ships that have been refused access to ports within the Community must be made available in the inspection database and published in conformity with the provisions of Article 26 and of Annex XIII.

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ANNEX IX - INSPECTION REPORT
(referred to in Article 17)

The inspection report must contain at least the following items.

I. General

1. Competent authority that wrote the report
2. Date and place of inspection
3. Name of the ship inspected
4. Flag
5. Type of ship (as indicated in the Safety Management Certificate)
6. IMO identification number
7. Call sign
8. Tonnage (gt)
9. Deadweight tonnage (where relevant)
10. Year of construction as determined on the basis of the date indicated in the ship's safety certificates
11. The classification society or classification societies as well as any other organisation, where relevant, which has/have issued to this ship the classification certificates, if any
12. The recognised organisation or recognised organisations and/or any other party which has/have issued to this ship certificates in accordance with the applicable Conventions on behalf of the flag State

13. Name and address of the ship's company or the operator
14. Name and address of the charterer responsible for the selection of the ship and type of charter in the case of ships carrying liquid or solid cargoes in bulk
15. Final date of writing the inspection report
16. Indication that detailed information on an inspection or a detention may be subject to publication.

II. Information relating to inspection

1. Certificates issued in application of the relevant Conventions, authority or organisation that issued the certificate(s) in question, including the date of issue and expiry
2. Parts or elements of the ship that were inspected (in the case of more detailed or expanded inspection)
3. Port and date of the last intermediate or annual or renewal survey and the name of the organisation which carried out the survey
4. Type of inspection (inspection, more detailed inspection, expanded inspection)
5. Nature of the deficiencies
6. Measures taken.

III. Additional information in the event of detention

1. Date of detention order
2. Date of lifting the detention order
3. Nature of the deficiencies warranting the detention order (references to Conventions, if relevant)
4. Indication, where relevant, of whether the recognised organisation or any other private body that carried out the survey has a responsibility in relation to the deficiencies which, alone or in combination, led to detention
5. Measures taken.

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ANNEX X - CRITERIA FOR DETENTION OF A SHIP (referred to in Article 19(3))

INTRODUCTION

Before determining whether deficiencies found during an inspection warrant detention of the ship involved, the inspector must apply the criteria mentioned below in points 1 and 2.

Point 3 includes examples of deficiencies that may for themselves warrant detention of the ship involved (see Article 19(3)). Where the ground for detention is the result of accidental damage suffered on the ship's voyage to a port, no detention order shall be issued, provided that:

(a) due account has been given to the requirements contained in Regulation I/11(c) of SOLAS 74 regarding notification to the flag State administration, the nominated surveyor or the recognised organisation responsible for issuing the relevant certificate;

(b) prior to entering a port, the master or shipowner has submitted to the port State control authority details on the circumstances of the accident and the damage suffered and information about the required notification of the flag State administration;

(c) appropriate remedial action, to the satisfaction of the Authority, is being taken by the ship; and

(d) the authority has ensured, having been notified of the completion of the remedial action, that deficiencies which were clearly hazardous to safety, health or the environment have been rectified.

1. Main criteria

When exercising his professional judgement as to whether or not a ship should be detained the inspector must apply the following criteria:

Timing:

Ships which are unsafe to proceed to sea must be detained upon the first inspection irrespective of how much time the ship will stay in port.

Criterion:

The ship is detained if its deficiencies are sufficiently serious to merit an inspector returning to satisfy himself that they have been rectified before the ship sails.

The need for the inspector to return to the ship is a measure of the seriousness of the deficiencies. However, it does not impose such an obligation for every case. It implies that the authority must verify one way or another, preferably by a further visit, that the deficiencies have been rectified before departure.

2. Application of main criteria

When deciding whether the deficiencies found in a ship are sufficiently serious to merit detention the inspector must assess whether:

1. the ship has relevant, valid documentation;
2. the ship has the crew required in the Minimum Safe Manning Document.

During inspection the inspector must further assess whether the ship and/or crew is able to:

3. navigate safely throughout the forthcoming voyage;
4. safely handle, carry and monitor the condition of the cargo throughout the forthcoming voyage;
5. operate the engine room safely throughout the forthcoming voyage;
6. maintain proper propulsion and steering throughout the forthcoming voyage;
7. fight fires effectively in any part of the ship if necessary during the forthcoming voyage;
8. abandon ship speedily and safely and effect rescue if necessary during the forthcoming voyage;
9. prevent pollution of the environment throughout the forthcoming voyage;
10. maintain adequate stability throughout the forthcoming voyage;
11. maintain adequate watertight integrity throughout the forthcoming voyage;
12. communicate in distress situations if necessary during the forthcoming voyage;
13. provide safe and healthy conditions on board throughout the forthcoming voyage;
14. provide the maximum of information in case of accident.

If the answer to any of these assessments is negative, taking into account all deficiencies found, the ship must be strongly considered for detention. A combination of deficiencies of a less serious nature may also warrant the detention of the ship.

3. To assist the inspector in the use of these guidelines, there follows a list of deficiencies, grouped under relevant Conventions and/or codes, which are considered of such a serious nature that they may warrant the detention of the ship involved. This list is not intended to be exhaustive.

3.1. *General*

The lack of valid certificates and documents as required by the relevant instruments. However, ships flying the flag of States not party to a relevant Convention or not having implemented another relevant instrument, are not entitled to carry the certificates provided for by the Convention or other relevant instrument. Therefore, absence of the required certificates should not by itself constitute reason to detain these ships; however, in applying the "no more favourable treatment" clause, substantial compliance with the provisions is required before the ship sails.

3.2. *Areas under SOLAS 74*

1. Failure of the proper operation of propulsion and other essential machinery, as well as electrical installations.

2. Insufficient cleanliness of engine room, excessive amount of oily-water mixtures in bilges, insulation of piping, including exhaust pipes in engine room contaminated by oil, improper operation of bilge pumping arrangements.

3. Failure of the proper operation of emergency generator, lighting, batteries and switches.

4. Failure of the proper operation of the main and auxiliary steering gear.
5. Absence, insufficient capacity or serious deterioration of personal life- saving appliances, survival craft and launching arrangements.
6. Absence, non-compliance or substantial deterioration of fire detection system, fire alarms, fire-fighting equipment, fixed fire-extinguishing installation, ventilation valves, fire dampers, quick-closing devices to the extent that they cannot comply with their intended use.
7. Absence, substantial deterioration or failure of proper operation of the cargo deck area fire protection on tankers.
8. Absence, non-compliance or serious deterioration of lights, shapes or sound signals.
9. Absence or failure of the proper operation of the radio equipment for distress and safety communication.
10. Absence or failure of the proper operation of navigation equipment, taking the provisions of SOLAS 74, Regulation V/16.2 into account.
11. Absence of corrected navigational charts, and/or all other relevant nautical publications necessary for the intended voyage, taking into account that a type approved electronic chart display and information system (ECDIS) operating on official data may be used as a substitute for the charts.
12. Absence of non-sparking exhaust ventilation for cargo pump rooms.
13. Serious deficiency in the operational requirements, as described in Section 5.5 of Annex 1 to the Paris MOU.
14. Number, composition or certification of crew not corresponding with the safe manning document.
15. Failure to carry out the enhanced survey programme in accordance with SOLAS 74, Chapter XI, Regulation 2.

3.3. *Areas under the IBC Code*

1. Transport of a substance not mentioned in the Certificate of Fitness or missing cargo information.
2. Missing or damaged high-pressure safety devices.
3. Electrical installations not intrinsically safe or not corresponding to code requirements.
4. Sources of ignition in hazardous locations.
5. Contraventions of special requirements.
6. Exceeding of maximum allowable cargo quantity per tank.
7. Insufficient heat protection for sensitive products.

3.4. *Areas under the IGC Code*

1. Transport of a substance not mentioned in the Certificate of Fitness or missing cargo information.
2. Missing closing devices for accommodation or service spaces.
3. Bulkhead not gastight.
4. Defective air locks.
5. Missing or defective quick-closing valves.
6. Missing or defective safety valves.
7. Electrical installations not intrinsically safe or not corresponding to code requirements.
8. Ventilators in cargo area not operable.
9. Pressure alarms for cargo tanks not operable.
10. Gas detection plant and/or toxic gas detection plant defective.
11. Transport of substances to be inhibited without valid inhibitor certificate.

3.5. *Areas under LL 66*

1. Significant areas of damage or corrosion, or pitting of plating and associated stiffening in decks and hull affecting seaworthiness or strength to take local loads, unless proper temporary repairs for a voyage to a port for permanent repairs have been carried out.
2. A recognised case of insufficient stability.
3. The absence of sufficient and reliable information, in an approved form, which by rapid and simple means, enables the master to arrange for the loading and ballasting of his ship in such a way that a safe margin of stability is maintained at all stages and at varying conditions of the voyage, and that

the creation of any unacceptable stresses in the ship's structure are avoided.
4. Absence, substantial deterioration or defective closing devices, hatch closing arrangements and watertight doors.
5. Overloading.
6. Absence of draft mark or draft mark impossible to read.

3.6. *Areas under MARPOL 73/78, Annex I*
1. Absence, serious deterioration or failure of proper operation of the oily-water filtering equipment, the oil discharge monitoring and control system or the 15 ppm alarm arrangements.
2. Remaining capacity of slop and/or sludge tank insufficient for the intended voyage.
3. Oil Record Book not available.
4. Unauthorised discharge bypass fitted.
5. Survey report file missing or not in conformity with Regulation 13G(3)(b) of MARPOL 73/78.

3.7. *Areas under MARPOL 73/78, Annex II*
1. Absence of the P&A Manual.
2. Cargo is not categorised.
3. No cargo record book available.
4. Transport of oil-like substances without satisfying the requirements or without an appropriately amended certificate.
5. Unauthorised discharge bypass fitted.

3.8. *Areas under MARPOL 73/78, Annex V*
1. Absence of the garbage management plan.
2. No garbage record book available.
3. Ship's personnel not familiar with disposal/discharge requirements of garbage management plan.

3.9. *Areas under the STCW 78/95 and Directive 2008/106/EC.*
1. Failure of seafarers to hold a certificate, to have an appropriate certificate, to have a valid dispensation or to provide documentary proof that an application for an endorsement has been submitted to the flag State administration.
2. Evidence that a certificate has been fraudulently obtained or the holder of a certificate is not the person to whom that certificate was originally issued.
3. Failure to comply with the applicable safe manning requirements of the flag State administration.
4. Failure of navigational or engineering watch arrangements to conform to the requirements specified for the ship by the flag State administration.
5. Absence in a watch of a person qualified to operate equipment essential to safe navigation, safety radio communications or the prevention of marine pollution.
6. Failure to provide proof of professional proficiency for the duties assigned to seafarers for the safety of the ship and the prevention of pollution.
7. Inability to provide for the first watch at the commencement of a voyage and for subsequent relieving watches persons who are sufficiently rested and otherwise fit for duty.

3.10. *Areas under MLC 2006*
1. Insufficient food for voyage to next port.
2. Insufficient potable water for voyage to next port.
3. Excessively unsanitary conditions on board.
4. No heating in accommodation of a ship operating in areas where temperatures may be excessively low.
5. Insufficient ventilation in accommodation of a ship.
6. Excessive garbage, blockage by equipment or cargo or otherwise unsafe conditions in passageways/accommodations.
7. Clear evidence that watchkeeping and other duty personnel for the first watch or subsequent relieving watches are impaired by fatigue.

8. The conditions on board are clearly hazardous to the safety, health or security of seafarers.
9. The non-conformity constitutes a serious or repeated breach of the requirements of MLC 2006 (including seafarer's rights) relating to the living and working conditions of seafarers on the ship, as stipulated in the ship's maritime labour certificate and declaration of maritime labour compliance.

3.11. *Areas which may not warrant a detention, but where, e.g. cargo operations have to be suspended.*
Failure of the proper operation (or maintenance) of inert gas system, cargo- related gear or machinery are considered sufficient grounds for stopping cargo operation.

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ANNEX XI - MINIMUM CRITERIA FOR INSPECTORS (referred to in Article 22(1) and (5))

1. Inspectors must have appropriate theoretical knowledge and practical experience of ships and their operation. They must be competent in the enforcement of the requirements of Conventions and of the relevant port State control procedures. This knowledge and competence in enforcing international and Community requirements must be acquired through documented training programmes.

2. Inspectors must, as a minimum, have either:
(a) appropriate qualifications from a marine or nautical institution and relevant seagoing experience as a certificated ship officer holding or having held a valid STCW II/2 or III/2 certificate of competency not limited as regards the operating area or propulsion power or tonnage; or
(b) passed an examination recognised by the competent Authority as a naval architect, mechanical engineer or an engineer related to the maritime fields and worked in that capacity for at least five years; or
(c) a relevant university degree or equivalent and have properly trained and qualified as ship safety inspectors.

3. The inspector must have:
— completed a minimum of one year's service as a flag-State inspector either dealing with surveys and certification in accordance with the Conventions or involved in the monitoring of the activities of recognised organisations to which statutory tasks have been delegated, or
— gained an equivalent level of competence by following a minimum of one year's field training participating in Port State Control inspections under the guidance of experienced Port State Control Officers.

4. The inspectors mentioned under 2(a) must have gained a maritime experience of at least 5 years, including periods served at sea as officers in the deck - or engine - department respectively, or as a flag State inspector or as an assistant port State control inspector. Such experience shall include a period of at least two years at sea as a deck or engine officer.

5. The inspectors must have the ability to communicate orally and in writing with seafarers in the language most commonly spoken at sea.

6. Inspectors not fulfilling the above criteria are also accepted if they are employed by the competent authority of a Member State for port State control at the date of adoption of this Directive.

7. Where in a Member State inspections referred to in Article 15(1) and (2) are performed by port State control inspectors; those inspectors shall have appropriate qualifications, which shall include sufficient theoretical and practical experience in maritime security. This shall normally include:
(a) a good understanding of maritime security and how it is applied to the operations being examined;
(b) a good working knowledge of security technologies and techniques;
(c) a knowledge of inspection principles, procedures and techniques;
(d) a working knowledge of the operations being examined.

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ANNEX XII - FUNCTIONALITIES OF THE INSPECTION DATABASE (referred to in Article 24(1))

1. The inspection database shall include at least the following functionalities:
   — incorporate inspection data of Member States and all signatories to the Paris MOU,
   — provide data on the ship risk profile and on ships due for inspections,
   — calculate the inspection commitments for each Member State,
   — produce the white as well as the grey and black list of flag States, referred to in Article 16(1),
   — produce data on the performance of companies,
   — identify the items in risk areas to be checked at each inspection.

2. The inspection database shall have the capability to adapt to future developments and to interface with other Community maritime safety databases, including SafeSeaNet, which shall provide data on ships' actual calls to ports of Member States and, where appropriate, to relevant national information systems.

3. A deep hyperlink shall be provided from the inspection database to the Equasis information system. Member States shall encourage that the public and private databases relating to ship inspection accessible through Equasis are consulted by the inspectors.

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ANNEX XIII - PUBLICATION OF INFORMATION RELATED TO INSPECTIONS, DETENTIONS AND REFUSALS OF ACCESS IN PORTS AND ANCHORAGES OF MEMBER STATES (referred to in Article 26)

1. Information published in accordance with Article 26 must include the following:
   (a) name of the ship;
   (b) IMO identification number;
   (c) type of ship;
   (d) tonnage (gt);
   (e) year of construction as determined on the basis of the date indicated in the ship's safety certificates;
   (f) name and address of the company of the ship;
   (g) in the case of ships carrying liquid or solid cargoes in bulk, the name and address of the charterer responsible for the selection of the ship and the type of charter;
   (h) flag State;
   (i) classification and statutory certificates issued in accordance with the relevant Conventions, and the authority or organisation that issued each one of the certificates in question, including the date of issue and expiry;
   (j) port and date of the last intermediate or annual survey for the certificates in point (i) above and the name of the authority or organisation which carried out the survey;
   (k) date, country, port of detention.

2. For ships which have been detained, information published in accordance with Article 26 must also include:
   (a) number of detentions during the previous 36 months;
   (b) date when the detention was lifted;
   (c) duration of detention, in days;
   (d) the reasons for detention, in clear and explicit terms;
   (e) indication, where relevant, of whether the recognised organisation that carried out the survey has a responsibility in relation to the deficiencies which, alone or in combination, led to detention;
   (f) description of the measures taken in the case of a ship which has been allowed to proceed to the nearest appropriate repair yard;
   (g) if the ship has been refused access to any port or anchorage within the Community, the reasons for the measure in clear and explicit terms.

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ANNEX XIV - DATA PROVIDED IN THE CONTEXT OF MONITORING IMPLEMENTATION (referred to in Article 29)

1. Every year Member States must provide the Commission with the following data for the preceding year by 1 April at the latest.

1.1. Number of inspectors acting on their behalf in the framework of port State control
This information must be communicated to the Commission using the following model table[1] [2].

Port/area	Number of full-time inspectors (A)	Number of part-time inspectors (B)	Conversion of (B) to full-time (C)	Total (A+C)
Port X/or Area X …				
Port X/or Area X …				
TOTAL				

1.2. Total number of individual ships that entered their ports at national level. The figure shall be the number of ships covered by this Directive that entered their ports at national level counted only once.

2. Member States must:

(a) provide the Commission every six months with a list of calls at port of individual ships, other than regular passenger and freight ferry services, that entered their ports or which have notified to a port authority or body their arrival in an anchorage, containing for each movement of the ship its IMO identification number, its date of arrival and the port. The list shall be provided in the form of a spreadsheet programme enabling an automatic retrieval and processing of the abovementioned information. The list shall be provided within 4 months from the end of the period to which data pertained;

and

(b) provide the Commission with separate lists of regular passenger ferry services and regular freight ferry services referred to in point (a), not later than six months following the implementation of this Directive, and thereafter each time changes take place in such services. The list shall contain for each ship its IMO identification number, its name and the route covered by the ship. The list shall be provided in the form of a spreadsheet programme enabling an automatic retrieval and processing of the abovementioned information.

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[1] Where the inspections carried out in the context of port State control represent only part of the inspectors' work, the total number of inspectors must be converted to a number equivalent to full-time inspectors. Where the same inspector works in more than one port or geographical area the applicable part-time equivalent must be counted in each port.

[2] This information must be provided at national level and for each port of the Member State concerned. For the purposes of this Annex, a port is taken to mean an individual port or the geographical area covered by an inspector or team of inspectors, comprising several individual ports where appropriate.

ANNEX XV

PART A

Repealed Directive with its successive amendments

(referred to in Article 37)

Council Directive 95/21/EC (OJ L157, 7.7.1995, p. 1)

Council Directive 98/25/EC (OJ L133, 7.5.1998, p. 19)

Commission Directive 98/42/EC (OJ L184, 27.6.1998, p. 40)

Commission Directive 1999/97/EC (OJ L331, 23.12.1999, p. 67)

Directive 2001/106/EC of the European Parliament and of the Council (OJ L19, 22.1.2002, p. 17)

Directive 2002/84/EC of the European Parliament and of the Council - Only Article 4 (OJ L324, 29.11.2002, p. 53)

PART B

List of time limits for transposition into national law

(referred to in Article 37)

Directive	Time limit for transposition
Directive 95/21/EC	30 June 1996
Directive 98/25/EC	30 June 1998
Directive 98/42/EC	30 September 1998
Directive 1999/97/EC	13 December 2000
Directive 2001/106/EC	22 July 2003
Directive 2002/84/EC	23 November 2003

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ANNEX XVI
CORRELATION TABLE
(referred to in Article 37)

Directive 95/21/EC	This Directive
Article 1, introductory wording	Article 1, introductory wording
Article 1, first indent	Article 1(a)
Article 1, second indent	Article 1(b)
-	Article 1(c)
Article 2, introductory wording	Article 2, introductory wording
Article 2(1), introductory wording	Article 2(1), introductory wording
Article 2(1), first indent	Article 2(1)(a)
Article 2(1), second indent	Article 2(1)(b)
Article 2(1), third indent	Article 2(1)(c)
Article 2(1), fourth indent	Article 2(1)(d)
Article 2(1), fifth indent	Article 2(1)(e)
Article 2(1), sixth indent	Article 2(1)(f)
Article 2(1), seventh indent	Article 2(1)(g)
Article 2(1), eighth indent	Article 2(1)(h)
Article 2(2)	Article 2(2)
–	Article 2(3)
–	Article 2(4)
Article 2(3)	Article 2(5)
Article 2(4)	–
–	Article 2(6)
–	Article 2(7)
Article 2(5)	Article 2(8)
–	Article 2(9)
–	Article 2(10)
Article 2(6)	Article 2(11)
Article 2(7)	Article 2(12)
Article 2(8)	Article 2(13)
–	Article 2(14)
Article 2(9)	Article 2(15)
–	Article 2(16)
Article 2(10)	Article 2(17)

Directive 95/21/EC	This Directive
–	Article 2(18)
–	Article 2(19)
–	Article 2(20)
–	Article 2(21)
–	Article 2(22)
Article 3(1), first subparagraph	Article 3(1), first subparagraph
–	Article 3(1), second subparagraph
–	Article 3(1), third subparagraph
Article 3(1), second subparagraph	Article 3(1), fourth subparagraph
–	Article 3(1), fifth subparagraph
–	Article 3(1), sixth subparagraph
Article 3(2) to (4)	Article 3(2) to (4)
–	Article 4(1)
Article 4	Article 4(2)
Article 5	–
–	Article 5
–	Article 6
–	Article 7
–	Article 8
–	Article 9
–	Article 10
–	Article 11
–	Article 12
Article 6(1), introductory wording	–
–	Article 13(1), introductory wording
Article 6(1)(a)	Article 13(1)(a)
–	Article 13(1)(b)
Article 6(1)(b)	Article 13(1)(c)
Article 6(2)	–
–	Article 13(2)
Article 6(3)	Article 13(3)
Article 6(4)	–
Article 7	–
Article 7a	–

Directive 95/21/EC	This Directive
Article 7b	–
–	Article 14
–	Article 15
–	Article 16
Article 8	Article 17
–	Article 18
Article 9(1) and (2)	Article 19(1) and (2)
Article 9(3), first sentence	Article 19(3)
Article 9(3), sentences 2 to 4	Article 19(4)
Article 9(4) to (7)	Article 19(5) to (8)
–	Article 19(9) and (10)
Article 9a	–
Article 10(1) to (3)	Article 20(1) to (3)
–	Article 20(4)
Article 11(1)	Article 21(1)
–	Article 21(2)
Article 11(2)	Article 21(3), first subparagraph
Article 11(3), first subparagraph	–
Article 11(3), second subparagraph	Article 21(3), second subparagraph
Article 11(4) to (6)	Article 21(4) to (6)
Article 12(1) to (3)	Article 22(1) to (3)
Article 12(4)	Article 22(4)
–	Article 22(5) to (7)
Article 13(1) to (2)	Article 23(1) and (2)
– Article 14	Article 23(3) to (5) –
Article 15	–
–	Article 24
–	Article 25
–	Article 26
–	Article 27
Article 16(1) and (2)	Article 28(1) and (2)
Article 16(2a)	Article 28(3)
Article 16(3)	Article 28(4)

Directive 95/21/EC	This Directive
Article 17	Article 29
–	Article 30
Article 18	Article 31
Article 19	Article 32
–	Article 33
Article 19a	Article 34
–	Article 35
Article 20	Article 36
–	Article 37
Article 21	Article 38
Article 22	Article 39
Annex I	–
–	Annex I
–	Annex II
–	Annex III
Annex II	Annex IV
Annex III	Annex V
Annex IV	Annex VI
Annex V	Annex VII
Annex VI	Annex X
Annex VII	Annex XI
–	Annex XII
Annex VIII	Annex XIII
Annex IX	Annex IX
Annex X	Annex XIV
Annex XI	Annex VIII
Annex XII	–
–	Annex XV
–	Annex XVI

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