

# **‘INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS’ BALLAST WATER AND SEDIMENTS 2004’ – AMENDMENTS TO THE CURRENT CROATIAN LEGISLATION FOR IMPROVED IMPLEMENTATION**

**A Legislation Drafting Project submitted in partial fulfillment of the  
requirements for the award of the Degree of Master of Laws (LL.M.) in  
International Maritime Law at the IMO International Maritime Law  
Institute**

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**Academic Year 2017-2018**

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***Any assumption and/or conclusion made within the analysis are not reflective of the position of any Croatian government entity or IMO-IMLI.***

**DEDICATION**

**TO MY PARENTS**

## **ACKNOWLEDGEMENTS**

I would like to thank IMLI and its staff for giving me an opportunity to learn and grow.

I would also like to thank Mr. Julius Yano for his assistance in developing this project and draft.

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## **LIST OF ABBREVIATIONS**

1. BWM Convention – Ballast Water Management Convention
2. HAB – Harmful Algal Bloom
3. HAOP – Harmful Aquatic Organisms and Pathogens
4. IAS – Invasive Alien Species
5. IMO – International Maritime Organization.
6. IOC-UNESCO – Inter-governmental Oceanic Commission of UNESCO.
7. MEPC – IMO’s Marine Environment Protection Committee.
8. NIS – Non-indigenous Species.
9. SOLAS Convention – Safety of Life at Sea Convention.

## **TABLE OF LEGISLATION**

### **I. INTERNATIONAL INSTRUMENTS**

1. Ballast Water Management Convention, 2004
2. Resolution MEPC.124(53) adopted on 22 July 2005: Guidelines for Ballast Water Exchange (G6)

### **II. NATIONAL LEGISLATION**

1. Regulation on Ballast Water Management and Supervision, 2012 (N.N. 128/2012)
2. Croatian Maritime Code (N.N. 26/15)

## **ANNEX**

### **I. ANNEX 1**

Tables from Mazetič et al. Research on Harmful Aquatic Organisms and Pathogens

### **II. ANNEX 2**

2017 Guidelines on Ballast Water Exchange (G6)



## **I.EXPLANATORY NOTE**

### **INTRODUCTION**

In 2012 Croatia passed subsidiary legislation in accordance with Article 46.b. of the Maritime Code, the purpose of which was to implement into national legislation the Ballast Water Management Convention, 2004 (hereinafter the ‘Convention). Croatian ‘Regulation on Ballast Water Management and Supervision’<sup>1</sup> (Croatian Regulation) has since not been amended and upon a detailed analysis, it is argued that there is a lack of sufficient provisions addressing issues of ship certification, ship inspection, ballast water management systems, violations and sanctions. As a response to these findings, this drafting project considers and examines the benefits of the implementation of these provisions into the domestic law of Croatia and suggests necessary amendments to achieve its effective implementation.

## **1 Ballast Water**

### **1.1 Purpose of Ballast Water**

The main reason for which ballast water is used is, when a cargo vessel is not loaded, there needs to be extra weight added to the ship in order to create stability as provided by the Safety of Life at Sea Convention (SOLAS).<sup>2</sup> Material used for the addition of weight is called ballast<sup>3</sup> and throughout history different materials were used, however, today the primary material is water, because of the ease to perform its exchange and its accessibility to vessels as well as the implementation of steel hulls required by the SOLAS Convention.<sup>4</sup> Ballast is used even when a vessel is loaded to full, as the vessel may still require due to the high probability of the lack of weight distribution within the vessel.<sup>5</sup>

Some of the issues that may result from the insufficient amount of ballast water and thus

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<sup>1</sup> NN 128/2012 ‘Pravilnik o upravljanju i nadzoru balastnih voda’.

<sup>2</sup> International Convention for the Safety of Life at Sea, 1974 as amended by the Protocol in 1988 (adopted 01 November 1974, entered into force 25 May 1980) UNTS 1184.

<sup>3</sup> M. David, “*Vessels and Ballast Water*”, in David, M. and Gollasch, S. (eds), *Global Maritime Transport and Ballast Water Management: Issues and Solutions*, Springer, 14.

<sup>4</sup> Ibidem.

<sup>5</sup> Ibid., 15.

affecting stability of the ship are lack of propeller immersion, inadequate transversal inclination i.e. heeling and inadequate longitudinal inclination i.e. trim.<sup>6</sup>

On a global scale the ballast water discharges has been estimated by some at 10 billion tonnes<sup>7</sup> and 2.5 billion by others.<sup>8</sup> Though these estimates only refer to cargo vessels, it should be noted that the action of ballast water exchange is not only applicable to cargo vessels but also other vessels (such as bigger pleasure boats). For Croatia, ballast water exchange can have a significant impact, as there are a number of big ports designed specifically to accommodate for cruise ships in coastal cities which directly places the Croatian marine environment at risk.

## **1.2 Harmful Aquatic Organisms and their Transferral by Ballast Water**

Since the 1850s the number of new species in the marine environment which have been recorded has been parallel to the increase of trade, which can be attributed to both shipping as well as aquaculture developments.<sup>9</sup>

Through ballast water exchange of vessel which are involved in international voyages, certain species, known as Harmful Aquatic Organisms and Pathogens (HAOP) may be transferred into aquatic areas which are not native to it.<sup>10</sup> In the 'Convention' HAOP are defined as 'being any aquatic organisms or pathogens, which, if introduced into the sea including estuaries, or into fresh water courses, may cause hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas'.<sup>11</sup> As it can be noted, this definition is a very broad one, encompassing all potentially harmful non-indigenous, cryptogenic and impacting native aquatic specie including pathogens.<sup>12</sup> After HAOP enter foreign waters they may create adverse effects to that marine environment making them 'invasive alien species' (IAS). IAS is defined as 'those species which have an adverse effect on biological diversity, ecosystem functioning, socio-economic values, and/or human

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<sup>6</sup> Ibidem.

<sup>7</sup> Gollasch, S. (1998) Removal of barriers to the effective implementation of ballast water control and management measures in developing countries (for GEF/IMO/UNDP), London.

<sup>8</sup> Endersen Ø, Behrens HL, Brynestad S. Andersen AB, Skjong R (2004) Challenges in global ballast water management. Mar Pollut Bull 48: 615-623.

<sup>9</sup> Gollasch S., Minchin D. and David M., The Transfer of Harmful Aquatic Organisms and Pathogens with Ballast Water and Their Impact in David, M. et al Global Maritime Transport and Ballast Water Management: Issues and Solutions, 36.

<sup>10</sup> Ibidem., p.39.

<sup>11</sup> Ballast Water Management Convention, Article 1(8).

<sup>12</sup> Gollasch S. et al., (n9), p.37.

health in invaded regions'.<sup>13</sup> It should be noted, for the purpose of nomenclature that such IAS are a subcategory of non-indigenous species (NIS) i.e. those species which are not in their natural environment when they are introduced.<sup>14</sup>

There are several suggested reasons why there has been a growing number of species in the aquaculture. Firstly, it has been argued that as a result of ships becoming more efficient, faster and bigger the organisms are more likely to survive the voyage. Further, because of the growing size of the ship there is more ballast water is being discharged.<sup>15</sup> The increase of species transferral may also be correlated to climate change, as the water currents are growing stronger moving the NIS (including the HAOP) more easily to new geographical areas.<sup>16</sup> It is important to note that, even though there is a great number of non-native species which are introduced to different waters,<sup>17</sup> many of them are not invasive ones.<sup>18</sup> However, when invasive species are introduced into foreign waters, they can modify the natural environment with long-term implications.<sup>19</sup>

During studies of European ballast water samples viruses, bacteria (including human pathogens), fungi and algae were found, of which the most dominant groups were the molluscs and algae. Even fish which were smaller than 15 centimetres survived the pumps which are used for the process of ballast water exchange and were found inside the tanks.<sup>20</sup>

### **1.3 The Impact of Ballast Water on the Marine Environment**

The issue which arises with ballast water exchange is the fact that often, when not regulated, it can present a significant problem to the marine environment, and the environment in general.

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<sup>13</sup> Mozetič, P et al, 'Phytoplankton diversity in Adriatic ports: Lessons from the port baseline survey for the management of harmful algal species', *Marine Pollution Bulletin* (2017), 2.

<sup>14</sup> Pyšek, P., Hulme, P.E., Nentwig, W., 2009, Glossary of the main technical terms used in the handbook. In: DAISIE (Ed.), *Handbook of Alien Species in Europe*. Springer, Berlin, pp.375-379. As cited in: *ibid.* (n13), 1.

<sup>15</sup> Gollasch S. et al., (n9) p.36

<sup>16</sup> Gollasch S. et al., (n9), p.39

<sup>17</sup> Hayes K.R., Sliwa C. Identifying potential marine pests – a deductive approach applied to Australia. *Mar Pollut Bull* 46 (2003), 91-98 has found about 850 of them are as a result of shipping.

<sup>18</sup> They do not fall within the category of invasive alien species.

<sup>19</sup> Fonesca de Souza Rolim, M.H., *The International Law on Ballast Water: Preventing Biopollution*, Martinus Nijhoff Publishers, p.17.

<sup>20</sup> Leppäkoski, E., Gollasch, S., Gruszka, P., Ojaveer, H., Olenin, S., and Panov, V., *The Baltic – a sea of invaders*. *Can J Fish Aquat Sci*, 59, 2002a, 1175-1188. See also: Leppäkoski, E., Gollasch, S. and Olenin, S. (eds), *Invasive aquatic species of Europe distribution, impact and management*. Kluwer Academic Publishers, Dordrecht, (2002b).

HAOP may permanently affect the ecological balance (and the biodiversity of the marine environment) at the location they are discharged. Unfortunately, it is almost impossible to destroy the alien invasive species once they have entered and settled themselves in the foreign waters.<sup>21</sup> Currently, there are only a few reported cases of where eradication was a viable option, and that was arguably only due to the circumstances and conditions allowing action.<sup>22</sup> While oil and other types of pollution may be contained and stopped after they occur, the same cannot be said for the IAS.<sup>23</sup> It is very likely these species would just continue to spread if their body finds the new environment viable for them to survive in.<sup>24</sup>

The areas which are considered as ‘high risk’ are primarily ports<sup>25</sup>, in which ballast water exchange is an extremely common, if not daily, occurrence. For this reason, it is argued that the ballast water tanks and hull fouling are the most common and frequent introducers of IAS into the foreign waters which they visit.<sup>26</sup> One of the biggest HAOP threats to the Adriatic Sea is undeniably the occurrence of Harmful Algal Blooms (HAB). These types of occurrences contain toxic and harmful species linked to the death of marine organisms, human poisoning and significant changes in marine ecosystems.<sup>27</sup> Special note should be given to *Azadinium*, *Ostreopsis* and *Karenia* species as they produce a lot of toxin and have been found to contaminate seafood which people in the Adriatic Sea often consume.

A study by Mozetič P et al. (2017)<sup>28</sup> found 52 taxa<sup>29</sup> of HAOP in the Adriatic ports (Table 1. of the Annex). In Croatia, the most prominent harmful effects of taxa found in Croatian ports are: fish killing, PSP toxins<sup>30</sup> (Paralytic Shellfish Poisoning), DSP toxins (Diarrhetic Shellfish

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<sup>21</sup> Fonesca de Souza Rolim, M.H., (n19), p.19.

<sup>22</sup> Fonesca de Souza Rolim, M.H., (n19), p.20.

<sup>23</sup> Fonesca de Souza Rolim, M.H., (n19), p.16.

<sup>24</sup> Ibid. at 17.

<sup>25</sup> Ibidem.

<sup>26</sup> For example, in the Baltic sea there has been a widespread of non-indigenous species in extremely high speed; the American barnacle *Balanus improvisus* 30 km•year<sup>-1</sup>, North American bristle worm *Marenzelleria viridis* 170-480 km•year<sup>-1</sup>. E. Leppaköski and S. Olenin, “Non-native species and rates of spread: Lessons from the brackish Baltic Sea”, *Biological Invasions* 2(2) (2000): 151-163.

<sup>27</sup> Lassus, P., Chomérat, N., Hess, P., Nézan, E., “Toxic and Harmful Microalgae of the World Ocean”, IOC Manuals and Guides 68 International Society for the Study of Harmful Algae/Intergovernmental Oceanographic Commission of UNESCO, Denmark (2016).

<sup>28</sup> Mozetič, P et al, Phytoplankton diversity in Adriatic ports: Lessons from the port baseline survey for the management of harmful algal species, *Marine Pollution Bulletin* (2017)

<sup>29</sup> A taxonomic group of any rank, such as a species, family, or class (Oxford Dictionary).

<sup>30</sup> The consumption of a PSP toxins paralyzes humans by blocking the sodium channels in the brain and prevent the neurons from performing normally (information provided from: <http://www.fao.org/docrep/007/y5486e/y5486e05.htm>)

Poisoning) and ASP toxins<sup>31</sup> (Amnesic Shellfish Poisoning). The toxins<sup>32</sup> mentioned above are all poisonous to humans who consume shellfish.

Furthermore, a number of taxa found are not within the IOC-UNESCO taxonomic list or other researches which had offered an updated taxonomic list.<sup>33</sup> Out of those 52 HAOP, only two found may be considered invasive alien species (IAS) to Croatia, *Ostreopsis* genus and *Pseudo-nitzschia multistriata*, as they are not only alien, but are also extremely toxic.<sup>34</sup> The latter species should especially be taken into account as the study has noted that the number of species which fall within that category has nearly doubled in the past 30 years.<sup>35</sup> This study omits one of the biggest port cities in Croatia, Dubrovnik, which has a lot of cruise vessels coming in on a daily basis during the tourist season and consequently has the potential of performing large amounts of ballast water exchange.

Another important observation is that most of HAOP identified are indigenous to the Adriatic Sea. By ratifying and partially implementing the 'Convention' Croatia has pledged to secure and protect other foreign waters from being exposed to HAOP found in our waters. For this reason, it is crucial to develop proper legislation on matters of violations, surveying and certification in order to prevent further intake of NIS and HAOP as well as export HAOP which is indigenous to Croatian waters.

As all of this is noted, the best suggested cure to bio-pollution resulting from customary shipping practices such as ballast water exchange is a proactive action. Undeniably, ballast water is crucial for the stability and safety of maritime voyages. This means that the solutions to the adverse environmental effects of ballast water exchange must be accommodating to both the safety and the need to protect the marine environment. Development of cost-effective technologies for filtration of HAOP, monitoring and development of a mechanism for the

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<sup>31</sup> ASP toxins (also known as domoic acid poisoning) are toxic for both the central and peripheral nervous systems of humans. It also has reported cases of amnesia, seizures, coma and death which is the reason it is known as the Amnesic Shellfish Poisoning. (information provided from: <http://www.fao.org/docrep/007/y5486e/y5486e0n.htm>)

<sup>32</sup> A toxin means a poison which is of animal or plant origin. Information provided from: <https://en.oxforddictionaries.com/definition/toxin>.

<sup>33</sup> Lassus et.al., (n 27).

<sup>34</sup> Mazetič, P. et al., (n28), p.8.

<sup>35</sup> Trainer, V.L., Bates, S.S, Lundholdm, N., Thesen, A.E., Cochlan, W.P., Adams, N.G., Trick, C.G., "Pseudo-nitzschia physiological ecology, phylogeny, toxicity, monitoring and impacts on ecosystem health". Harmful Algae 14 (2012), 271-300.

detection of early warning signs and subsequently prevention of the transferral would be of assistance towards this goal.<sup>36</sup>

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<sup>36</sup> Fonesca de Souza Rolim, M.H., (n18), p.20.

## **2 Overview of the Ballast Water Management Convention**

### **2.1 Historical Development**

As the shipping community acknowledged issues discussed above occurring in the marine environment the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004<sup>37</sup> (hereafter The Convention) was called for. The 'Convention' was discussed taking into consideration requirements set out in the 1992 Convention on Biological Diversity.<sup>38</sup> Moreover, a request was made by the United Nations Conference on Environment and Development (UNCED) to the International Maritime Organisation (IMO) to consider the adoption of rules for ballast water discharge under its auspice.

The Convention was adopted on 13 February 2004, and entered into force 8<sup>th</sup> of September 2017.<sup>39</sup> It currently has 63 Contracting Parties with the combined merchant shipping tonnage of the States standing at 68.51% gross tonnage.<sup>40</sup>

### **2.2 Overview of the Convention**

The objective of this Convention is to 'prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of HAOP through the control and management of ships' Ballast Water and Sediments, as well as to avoid unwanted side-effects from such control and to encourage developments in related knowledge and technology'.<sup>41</sup>

It is comprised of three parts. The first part are the Articles which impose obligations and provide rights to the State Parties (SP) regarding ballast water management and the manner in which the SP shall ensure the compliance with the Convention. The second part of the

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<sup>37</sup> International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (adopted 13 February 2004, entered into force 8 September 2017).

<sup>38</sup> Convention on Biological Diversity, 1992 (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79.

<sup>39</sup>[http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-\(BWM\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-(BWM).aspx)

<sup>40</sup> <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/21-BWM-EIF.aspx>

<sup>41</sup> Preamble of the 'Convention'.

Convention are Regulations in the Annex of the Convention which are acknowledged by Article 2.2<sup>42</sup> to be of equal importance and implementation requirements as the Articles themselves. These Regulations discuss in greater detail the ballast water management for ships themselves for example the manner and area in which the ballast water exchange is to be performed.<sup>43</sup> It furthermore details the exceptions to these rules and other requirements set out for ships of State Party nationality.<sup>44</sup>

Lastly, the Marine Environment Protection Committee (MEPC) issued in 2005 thirteen Guidelines to further help States in the implementation of the Convention and requirements set out therein.<sup>45</sup> Regulations refer to the Guidelines with the notion that the proper execution of the provisions requires compliance with the Guidelines.

Issues required to be regulated which are contained in the Convention are as follows:

- (a) Ballast water management plan
- (b) Ballast water exchange
- (c) Sediment reception facilities
- (d) Control of the transfer of harmful aquatic organisms and pathogens through ships' ballast water and sediments
- (e) Inspection of the ships for the prevention of above mentioned violations

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<sup>42</sup> Article 2(2) states 'the Annex forms an integral part of this Convention'.

<sup>43</sup> Regulation B-4.

<sup>44</sup> Section B of the Regulations.

<sup>45</sup> Guidelines for Ballast Water Management Equivalent Compliance (G3) (Resolution MEPC.123(53) adopted on 22 July 2005)

Guidelines for Ballast Water Exchange (G6) (Resolution MEPC.123 (53) adopted on 22 July 2005)

Guidelines for Ballast Water Management and Development of Ballast Water Management Plans (G4) (Resolution MEPC.127 (53) Adopted on 22 July 2005)

Guidelines for Approval and Oversight of Prototype Ballast Water Treatment Technology Programmes (G10) (Draft Resolution MEPC.140(54) adopted on 14 March 2006)

Guidelines for Ballast Water Exchange Design and Construction Standards (G11) (Resolution MEPC.149(55) adopted on 13 October 2006)

Guidelines on Designation of Areas for Ballast Water Exchange (G14) (Resolution MEPC.151(55) adopted on 13 October 2006)

Guidelines for Sediment Reception Facilities (G1) (Resolution MEPC.152(55) adopted on 13 October 2006)

Guidelines for Ballast Water Reception Facilities (G5) (Resolution MEPC.153(55) adopted on 13 October 2006)

Procedure for Approval of Ballast Water Management Systems that make use of Active Substances (G9) (Resolution MEPC.169(57) adopted on 4 April 2008)

Guidelines for Ballast Water Sampling (G2) (Resolution MEPC.173(58) adopted on 10 October 2008)

Guidelines for Approval of Ballast Water Management Systems (G8) (Resolution MEPC.174(58) adopted on 10 October 2008)

2012 Guidelines on Design and Construction to Facilitate Sediment Control on Ships (G12) (Resolution MEPC.209(63) adopted on 2 March 2012)

2016 Guidelines for Approval of Ballast Water Management Systems (G8) (Resolution MEPC.279(70) adopted on 28 October 2016).



(f) Co-operation of signatory States.

In pursuance of full compliance of vessel of Croatian nationality and vessels engaged in international voyages which later enter Croatian maritime zones,<sup>46</sup> there needs to be a consideration for the provisions which are not fully (or at all) implemented into the Croatian Regulation. The main reason to do so is for Croatia to be able to fully protect the environment, human health, property and resources on their own territory as well as the territory of other states. In light of this, below are discussed the elements of the Convention which have not been partially or fully implemented by the Croatian Regulation.

### **2.3 Survey, Certification and Inspection**

The Convention establishes obligations on the State Party to survey and certify all ships flying its flag<sup>47</sup> and furthermore states that any additional requirements other than those stated in the Convention which are made by the State will not be applicable on ships of other States.<sup>48</sup>

It can be said that one of the most important parts for the effective implementation of the Convention is establish under Article 8(1), which provides that the violation of requirements of the Convention is prohibited and sanctions established under the national law of the Flag State no matter where the violation occurs. In case violation occurs in a jurisdiction of a State Party, the Coastal State can impose sanctions on vessels which have committed such sanctions, whether they are of the Coastal State nationality or not.<sup>49</sup> This Article further discusses what measures must a State take in case of suspicion of violations i.e. the need for investigation, evidence and informing the relevant parties.<sup>50</sup> Also, when the ship is within the jurisdiction of a State when the violations are committed, the Coastal State may either ‘cause proceedings’ as per their national laws or it may provide the necessary information and evidence of the violations to the Flag State.<sup>51</sup> The last paragraph imposes an obligation on the State Parties that the sanctions must be ‘adequate in severity to discourage violations’.<sup>52</sup>

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<sup>46</sup> Article 3 provides the Convention applies to ships entitled to fly the flag of a Party. Furthermore, Article 3 (3) states ‘ 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’.

<sup>47</sup> Article 7(1).

<sup>48</sup> Article 7(2).

<sup>49</sup> Article 8(2).

<sup>50</sup> Article 8(1).

<sup>51</sup> Article 8(2).

<sup>52</sup> Article 8(3).

Furthermore, the Convention provides for the procedural measures regarding the inspections of ships in order to ensure compliance and they ‘may in any port or offshore terminal of another Party’ be inspected by the officers which are authorised to perform the inspection.<sup>53</sup>

The inspections are limited to the verification of the on-board Certificate and inspection of the Ballast Water Record Book and/or sampling of the ships Ballast Water.<sup>54</sup> Latter which is to be performed in compliance with the Guidelines.<sup>55</sup> Furthermore, this provision states that even though the State has the power to perform every laboratory test necessary on the ships Ballast Water samples, it may not unduly delay the ‘operation, movement or departure’ of the inspected vessel.<sup>56</sup>

Section two of Article 9 states that in cases there is no valid Certificate, or there are ‘clear grounds for believing’ the ship is not substantially corresponding to the information provided in the certificate; or the master or the crew are not familiar with necessary information concerning Ballast Water Management, there may be a detailed inspection. It should be noted that IMO guidelines for Port State Control under the BWM Convention 2004 are currently in development and as such there will be a requirement for further amendments to support the inspection of ships in accordance with the Convention once IMO implements them.

Article 10 regulates actions which are to be made by the States in case there is a detection by that State of violations performed by the vessel or if a request for an inspection is made by another State. Furthermore, Article 11 is complimentary to the aforementioned Article as it deals with the communication between the State and the ship and its Administration in case there is a violation.

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<sup>53</sup> Article 9.

<sup>54</sup> Article 9(1)(a)-(c).

<sup>55</sup> Resolution MEPC. 173(58) Guidelines for Ballast Water sampling (G2).

<sup>56</sup> Article 9(1)(c).

## 2.4 Annex of the Convention

The Regulations in the Annex are divided into five sections and provide more detail to the technical aspects of the control and management of ships ballast water and sediment. Section A deals with General provisions, Section B concerns ‘Management and control requirements for ships’. Section C deals with issues regarding ‘Special requirements in certain areas’. Furthermore, Section D provides the Standards for ‘Ballast Water Management’ and lastly, Section E of the Convention regulates the ‘Survey and Certification Requirements for Ballast Water Management’.

### (i) Regulation B-4

This Regulation sets out the requirements for the Ballast Water Exchange (BWE) and provides the requirement to follow the standard in Regulation D-1. The BWE will be conducted ‘at least 200 nautical miles from the nearest land and in water at least 200 meters in depth as well as cases in which the ship is not able to meet these requirements.’<sup>57</sup> In ‘all cases it is to be at least 50 nautical miles from the nearest land and in waters at least 200 meters in depth’.<sup>58</sup>

Though Croatia has implemented to the best extent possible regulations D-1<sup>59</sup> and D-2<sup>60</sup> it has not implemented Guidelines referred to in section one of the Regulation B-4, namely Guidelines G6 – Guidelines for Ballast Water Exchange.<sup>61</sup>

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<sup>57</sup> Regulation B-4.1.1.

<sup>58</sup> Regulation B-4.1.2.

<sup>59</sup> Annex Section D, Regulation D-1: (1) Ships performing Ballast Water exchange in accordance with this regulation shall do so with an efficiency of at least 95% 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% volumetric exchange is met.

<sup>60</sup> Annex Section D, Regulation D-2: (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 milliliters.

<sup>61</sup> IMO Resolution MEPC.124(53) Guidelines for Ballast Water Exchange (G6).

## (ii) Section E

This section establishes the requirements for the surveying and certification for ballast water management in order to establish ships whose Flag States have ratified the Convention are in compliance with the requirements set out in the Convention. Regulation E-1 requirements for surveying are detailed – firstly all ships which are and above 400 gross tonnage (GT) are applicable (with the exclusion of floating platforms, FSUs and FPSOs).<sup>62</sup> Furthermore, this Regulation provides for the procedural requirements of the survey, namely that it shall verify that the ‘plan required by regulation B-1<sup>63</sup> and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the requirements of the Convention’.<sup>64</sup>

If the ship is not in compliance with the Convention and that ship is in the port of another Party, that Party is to be notified immediately.<sup>65</sup> The Government of the port State, upon being notified of the lack of compliance is to give the officer, surveyor or organisation, which has notified them, any necessary assistance to carry out their obligations.<sup>66</sup>

Where there is an accident to a ship or there is a defect discovered which would *substantially*<sup>67</sup> affect the ability of a ship to conduct Ballast Water Management the owner, operator or other person in charge of the ship has to report at the earliest opportunity to the Administration (or any RO or a surveyor responsible for the issuance of the Certificate for that ship).<sup>68</sup> Subsequently, it may be necessary for an investigation in the same procedural format as that of an ‘initial survey’ to be performed.<sup>69</sup> This requirement poses further obligation on the State Party, as it is for the Administration to ‘fully guarantee the completeness and efficacy of the survey’ in *every case*.<sup>70</sup>

As for Regulation E-5 which regulates the duration of the certificate, Croatian Regulation provides that the Certificate shall be for five years. Furthermore, this Regulation states the

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<sup>62</sup> FSU – Floating Storage Unit; FPSO - Floating Production Storage and Offloading.

<sup>63</sup> Annex Section B, Regulation B-1.

<sup>64</sup> Regulation E-1.1.1.

<sup>65</sup> Regulation E-1.6.

<sup>66</sup> Ibidem.

<sup>67</sup> Emphasis added.

<sup>68</sup> Regulation E-1.7.

<sup>69</sup> Ibidem.

<sup>70</sup> Emphasis added.

Certificate will cease to be valid if ‘the structure, equipment has changed, it has been replaced or significantly repaired or if the ship is transferred to another flag’.<sup>71</sup> Also, if the surveys are not completed within the abovementioned periods or if it is not endorsed as required.<sup>72</sup>

## **2.5 Guidelines**

### **(i) Guidelines G6<sup>73</sup>**

Introduction of the Guidelines states that ‘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’.<sup>74</sup> Guidelines define what are the responsibilities of the crew, shipowners and operators, as well as the requirements for ballast water exchange.<sup>75</sup> Moreover, it establishes different methods for the BWE which are accepted by the Organization.<sup>76</sup> Guidelines also provides for precautions taken when performing such exchange.<sup>77</sup> Lastly, there is a requirements for the crew to be trained regarding the different safety methods which are to be taken into account.<sup>78</sup>

These guidelines provide an integral part of the BWE standard, as they provide precautions for safety issues which may arise during the performance of BWE as required by the Convention. They are also necessary in order to ensure crew on the vessels performing the exchange are required by law to take precautions as recognised by the Organization.

## **3 Ballast Water Management in Croatia**

### **3.1 Croatian Maritime Code**

In Chapter I.a. of the Maritime Code, Article 49.b.<sup>79</sup> provides that it is prohibited to discharge and reject in the sea and the shore stiff or fluid waste as well as any other substances which

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<sup>71</sup> Regulation E-5.9.1.

<sup>72</sup> Regulations E-5.9.3 and E-5.9.4.

<sup>73</sup> Resolution MEPC.124(53), adopted on 22 July 2005, Guidelines for Ballast Water Exchange (G6).

<sup>74</sup> Section 1.1.

<sup>75</sup> Section 3.1.

<sup>76</sup> Section 4.

<sup>77</sup> Section 5.

<sup>78</sup> Section 6.

<sup>79</sup> NN 26/15 Pomorski Zakonik Article 49.b.

pollute the sea, air or shore. Furthermore, sub-section two states that the marine object<sup>80</sup> is under an obligation to take measures in order to prevent transferral of HAOP through ships ballast water and sediments as well as by fouling.

Accordingly, sub-section five provides that the Minister of maritime, transport and infrastructure shall in collaboration with the minister in charge of the protection of the environment make regulation regarding ballast water management. The legislation promulgated by this Article has come into force, named the Croatian ‘Regulations on Ballast Water Management’.

### **3.2 Croatian ‘Regulations on Ballast Water Management and Supervision’**

In 2012 Croatia had a crisis of algal blooms (the so-called *cyanobacteria*’s) in its internal waters which resulted in significant damage to both the marine environment as well as animals who were living in the affected area. Consequentially, Croatia passed in 2012 ‘Regulation on Ballast Water Management and Supervision’, after ratifying the ‘Convention’. However, there is a need for improved implementation of the Convention in national legislation, for the reasons stated in previous Chapters, but primarily to protect Croatian marine environment as well as the environment of the entire world.

As it has been previously noted, Croatian legislation does not have any sanctions implemented pursuant with Article 7(3) of the ‘Convention’ which states ‘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 whenever they occur.’ Furthermore, pursuant to Article 4(2) of the ‘Convention’ which states ‘Each State 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 accordance with, and promote the attainment of the objectives of this Convention’. Croatia has, with qualifications, developed such national policies aligned with the intended promotion.

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<sup>80</sup> Marine object is defined in Article 5 of Chapter 1 of the Maritime Code as ‘an object intended for navigation on the sea, or an object permanently moored or anchored at the sea, that is an object which is completely or partly grounded or laid on the seabed’.

Article 4 of the Croatian Regulation provides that each vessel which is to enter a port in the Croatian territory and Master has a duty to deliver the Ballast Water Report Form to the Port State Control. Moreover, as stated in Article 5 of the Croatian Regulations, the Master must take preventative measures and ensure under what circumstances the intake of ballast water shall be avoided or limited.

The Croatian Regulation provides in its Annex a sample of the Ballast Water Report Form (which is the requirement of national legislation for the purpose of reporting the discharge within Croatian maritime zones, including the Protected eco-fisheries belt).<sup>81</sup> However, there are no standards set for the occasions in which, the ship to which the Croatian Regulation is applicable to, do not comply with Article 4 nor for infringements of Article 5 of the Croatian Regulation.

It is worth noting that within the Croatian Regulation there is a detailed discussion regarding the ballast water sampling.<sup>82</sup> Within the Chapter which deals with inspection of the ship, the only enforcement measure discussed is the inspection of the samples of the ships ballast water.<sup>83</sup> Though this manner of inspection may be the most effective to ensure compliance of a ship to the Convention and the Croatian Regulations respectively, it is not the most efficient way in consideration of commercial reasons. The consequence of this practice may be that the ships entering Croatian ports are unduly delayed by the inspections which is prima facie against the obligations of the State as provided in the Convention. One significant inadequacy of Croatian Regulation is that it does not provide the exceptional circumstances in which it may apply this manner of inspection.

The Convention states ‘...the time required to analyse the samples shall not be used as a basis for unduly delaying the operation, movement or departure to the ship.’<sup>84</sup> This provision can be read in conjunction with Article 12 which deals specifically with undue delay. The only reference within Croatian legislation made to this point can be found in Article 25 of the

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<sup>81</sup> Due to the location of Croatia and the fact the Adriatic Sea is a very small semi-enclosed sea which is shared by a number of States, Croatia was unable to proclaim an EEZ and instead opted for the ‘Protected eco-fisheries belt’ (Cro: Zaštićeni ekološko-ribolovni pojas (ZERP)). This expansion of jurisdiction was prescribed by a Decision of the Croatian parliament regarding expansion of jurisdiction of the Republic of Croatia in the Adriatic Seas (N.N., no 157/03 and 77/04).

<sup>82</sup> Article 22 and Article 23 of the Croatian Regulation on Ballast Water Management and Supervision 2012.

<sup>83</sup> Including provision which requires to take into account Resolution MEPC. 173(58) Guidelines for Ballast Water Sampling (G2).

<sup>84</sup> Article 9(1)(c)

Regulation under the subheading ‘Crew duties’ which states: ‘all measures possible shall be taken to avoid undue detention or delay of operations of the ship, for the purpose of application of the provisions of this Regulations’.

Article 17(3) of the Croatian Regulation states that surveying and endorsement of Ballast Water Certificate shall be conducted in the manner prescribed in the Technical Rules, a subsidiary legislation whose provisions are substantially similar to those provided in Section E of the Regulations. However, current legislation does not make any provisions to the issues of the inspection of certificates and surveying of the ships. Also, there is a lack of sanction provisions for violations made of the requirements in the Croatian Regulations, even though the Convention provides ‘sanctions... shall be adequate in severity to discourage violations of this Convention...’.<sup>85</sup>

Article 165 (1) of the Croatian Maritime Code states that the power to perform inspections, and enforce provisions of Croatian regulations concerning safety of ship and protection of the marine environment is given to Port State Control. By inclusion of Croatian Regulations on Ballast Water Management and Supervision into the ‘Technical Rules’ this enforcement will include any violations made to the provisions in the Croatian Regulations. The quantity of the penalty for violations will be that defined in the Croatian Regulations.

#### **4 How to Incorporate and Effectively Implement the Amendments of the Regulation into Croatian Laws**

By virtue of Article 141 of the Constitution of Croatia all international agreements which have been signed, confirmed to be in accordance with the Constitution as well as in force, are duly published and become part of the inner legal regime of Croatia and are, by legal strength, above national law.

As provided, there is a significant lack of provisions which are considered to be necessary by the international community for a sufficient implementation of Ballast Water Management Convention 2004. The Maritime Code provides in its provisions to create a Regulation on Ballast Water Management and though this has been done, some standards of the Convention

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<sup>85</sup> Article 8(4) of the Convention.



have not been satisfied. Special focus must be placed on the Ballast Water Exchange Standards, the BWM Certificate, as well as ship inspections and the sanctions for the violations of the provisions provided in the Croatian Regulation.

The amendments set forth are to be legislated as Amendments to the Regulation and upon approval from the Parliament they are to be consolidated with the current Regulation on Ballast Water Management and Supervision, 2012 and highlight in the new Regulation, published in the national gazette, the provisions added by annotating on the right side of the new or amended Article the number of the amended provision as stated in the national gazette (example: N.N./x-x).

### **Overview of the Amendments**

As the procedure is established, the Regulation is proposed to be amended by adding four Chapters. First chapter titled ‘Standard for Ballast Water Exchange’ provides for the implementation of Guidelines for Ballast Water Exchange (G6) to the Croatian Regulation. Second chapter titled ‘Ballast Water Management Certificate’ regulates instances in which the International Ballast Water Management Certificate will cease to be valid. Chapter 3 regarding ‘Inspections’ will further detail the necessary actions authorised inspectors are to perform upon the inspection of a ship to ensure compliance with the Regulations, namely the inspection of the International Ballast Water Management Certificate. And lastly, Chapter 4 titled ‘Violations and Penalties’ which discusses what violations lead to a penalty, who is to be penalised, actions which can be taken by the authorised personnel to penalise as well as the maximum fine which may be imposed depending on the gravity of the violations.

Furthermore, these Amendments to the Regulation contain an example of the Ballast Water Management Certificate as an Appendix 1 of the proposed Amendments.

**II. PROPOSED AMENDMENTS TO THE REGULATION OF  
BALLAST WATER MANAGEMENT AND SUPERVISION,  
2012**

## **II. PROPOSED AMENDMENTS TO THE REGULATION OF BALLAST WATER MANAGEMENT AND SUPERVISION, 2012**

In accordance with Article 49 paragraph b subparagraph 5 of the Maritime Code ('Narodne Novine' no.181/04, 76/07, 146/08, 61/11,26 /15), the minister of maritime transport and infrastructure, with approval from the minister of environmental protection makes the following:

### **AMENDMENTS TO THE REGULATION ON BALLAST WATER MANAGEMENT AND SUPERVISION 2012**

#### **STANDARD FOR BALLAST WATER EXCHANGE**

##### **Article 1**

In Article 12 as paragraph 1 shall be added –

‘(1) Ballast water exchange shall be performed in accordance with Guidelines G6 – Guidelines for ballast water exchange (IMO Resolution MEPC.124(53), as amended).’

##### **Article 2**

Immediately after paragraph 1 of the Article 12 of the Regulation for the paragraphs ‘1’, ‘2’, ‘3’, ‘4’, ‘5’ and ‘6’ shall be substituted by paragraphs ‘2’, ‘3’, ‘4’, ‘5’, ‘6’ and ‘7’.

#### **BALLAST WATER MANAGEMENT CERTIFICATE**

##### **Article 3**

In Article 17 after paragraph 2 the following paragraph 2.a shall be added–

‘(2.a) A Certificate shall be issued upon the completion of a survey made by the Recognised Organisation’.

##### **Article 4**

In Article 17 of the Regulation after paragraph 3 following paragraph 4 shall be added–

‘(4) The International Ballast Water Management Certificate shall cease to be valid in any of the following events:

- If the structure, equipment, systems, fittings, arrangements or material necessary to achieve full compliance with the international standards established by IMO are changed, replaced or significantly repaired, and the Certificate is not modified in accordance with those standards;
- Upon transfer of the ship to the flag of another State. A new Certificate shall only be issued when the other State issuing the new Certificate is fully satisfied that the ship is in compliance with the requirements prescribed in the international standards established by IMO; and
- If the relevant survey is not completed within the periods specified in Rules for Statutory Certification of Marine Objects.
- If the Certification is not endorsed by the Croatian government, or by the Recognised Organisation (RO) duly authorised to do so.
- Other cases defined under Croatian law and pursuant to the international treaties signed by the Republic of Croatia.'

## **INSPECTION**

### **Article 5**

In Article 22 after paragraph (3) following paragraph 4 shall be added –

(4) Ships that do not file a Ballast Water Reporting Form or apply ballast water management:

- will be subject to inspection
- may have its ballast water sampled and analysed before discharge is permitted;
- may, if deemed necessary to protect the safety of the marine environment, human health, property or resources, be denied permission to discharge ballast water or entry to a port.

## **VIOLATIONS AND PENALTIES**

### **Article 6**

After Chapter ‘Crew responsibilities’ following Chapter ‘Violations and Penalties’ shall be added –

‘(1) The following events constitute a breach punishable under this Law:

1) Failure to comply with Article 7 hereof:

Penalty – fine and prompt interdiction of the activities carried out at the location;

2) Failure to comply with Article 4 hereof:

Penalty – fine and temporary suspension of the activities carried out at the location;

3) Failure to comply with Article 5 hereof:

Penalty – fine and prompt suspension of the activities in the ship operating in an irregular manner

4) Failure to comply with Article 4 of this Law of amendment hereof:

Penalty – fine and prompt suspension of the activities in the ship operating in an irregular manner

5) Failure to comply with Article 19 hereof:

penalty – fine and no authorisation for the entry into Croatian territorial waters or call at Croatian ports’

6)

This penalty shall be meted out on the following persons, irrespective of negligence or wilful misconduct:

- the ship-owner
- the outfitter or ship operator
- the shipmaster.

## **Article 7**

Immediately after Article 6 the following Article shall be added –

‘(1) The value of the fines as stated in Article 6 of this Law of Amendments shall not exceed twenty thousand times the value of the Unit of Measurement at the moment of determining the

sanction, taking into consideration the risk or damage caused, the recidivism and the subsequent fulfilment of the obligation.

(2) The penalties provided in this Law do not affect any right to compensation or other civil or criminal remedy that may apply.'

## **FINAL PROVISIONS**

### **Article 8**

(1) These amendments come into force on the eight day from being published in 'Narodne Novine'.

(2) All other provisions that are contrary to this Law are repealed.

Class: \_\_\_\_\_

No. \_\_\_\_\_

Zagreb, \_\_\_\_\_ 2018

Minister Oleg Butković

## APPENDIX 1



### 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 Croatia by Hrvatski Registar Brodova.**

#### **Particulars of ship**

Name of ship .....

Distinctive number or letters .....

Port of registry .....

Gross Tonnage .....

IMO number .....

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) .....

**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)                      (Printed name and signed by official issuing the certificate)

### **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.....  
(Printed name and signed by duly authorized official)

Place.....

Date.....



**Annual\*/Intermediate survey\*:** Signed.....  
(Printed name and signed by duly authorized official)

Place.....

Date.....

**Annual\*/Intermediate survey\*:** Signed.....  
(Printed name and signed by duly authorized official)

\_\_\_\_\_  
\* Delete as appropriate

Place.....

Date.....

**Annual survey:** Signed.....  
(Printed name and signed by duly authorized official)

Place.....

Date.....

**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:

\_\_\_\_\_  
\* Delete as appropriate

Signed .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

**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 .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

**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 .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

**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 .....

\_\_\_\_\_  
\* Delete as appropriate

Signed .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

**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 .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

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

Signed .....  
(Printed name and signed by duly authorized official)

Place .....

Date.....

## **ANNEXES**

## ANNEX 1

In Table 1 the HAOP found in Croatia ports are highlighted. Furthermore, in Table 2 NIS are illustrated as found per port and the highlighted parts of the table are Croatian ports.

Table 1.1 – HAB found in the Adriatic ports

Abbreviations for the cities are as follows: PL – Ploče; PU – Pula; RI – Rijeka; ST- Split; SI – Šibenik.

Name	Harmful effect	Resting stage	AN	BI	BA	DU	KO	PL	PU	RI	ST	SI	TS	VE
<i>Dinophyceae</i>														
<i>Akashiwo sanguinea</i> <sup>a,b</sup>	Fish killing	Yes		+		+		+			+			
<i>Alexandrium minutum</i> <sup>a,b</sup>	PSP toxins	Yes	+	+			+				+	+		
<i>Alexandrium tamarense</i> <sup>a,b,c</sup>	PSP toxins	Yes		+				+			+	+		
<i>Alexandrium</i> spp. <sup>†</sup>	PSP toxins	Yes	+	+	+	+	+	+	+	+	+	+	+	+
<i>Amphidinium</i> cf. <i>operculatum</i> <sup>b</sup>	Fish killing	Not known		+										
<i>Azadinium</i> spp. <sup>d</sup>	AZP toxins (?)	In some species	+	+										
cf. <i>Amphidoma languida</i> <sup>a,b</sup>	AZP toxins (?)	No	+	+										
<i>Coccoloba monotis</i> <sup>b,a</sup>	Likely to present a potential danger	Yes									+			
<i>Dinophysis acuminata</i> <sup>a,b</sup>	DSP toxins	Yes	+	+	+			+	+	+				+
<i>Dinophysis acuta</i> <sup>a,b</sup>	DSP toxins	Yes	+		+						+	+		+
<i>Dinophysis caudata</i> <sup>a,b</sup>	DSP toxins	Not confirmed	+	+	+		+	+	+	+	+	+	+	+
<i>Dinophysis fortii</i> <sup>a,b</sup>	DSP toxins	Not confirmed	+	+	+		+	+	+	+	+	+	+	+
<i>Dinophysis infundibulum</i> <sup>a,b</sup>	DSP toxins	Not confirmed	+	+										
<i>Dinophysis ovum</i> <sup>a,b</sup>	DSP toxins	Not confirmed	+	+				+	+	+		+		
<i>Dinophysis sacculus</i> <sup>a,b</sup>	DSP toxins	Not confirmed	+	+	+		+		+	+	+	+	+	+
<i>Dinophysis tripos</i> <sup>a,b</sup>	DSP toxins	Yes	+	+	+		+		+	+		+	+	+
<i>Dinophysis</i> spp. <sup>†</sup>	DSP toxins	Not confirmed	+	+			+		+	+				
<i>Gonyaulax polygramma</i> <sup>b</sup>	High biomass	Yes	+	+	+	+	+	+	+	+	+	+	+	+
<i>Gonyaulax spinifera</i> <sup>a,b</sup>	YTX/homoYTX	Yes	+	+	+			+	+	+	+	+	+	+
<i>Heterocapsa triquetra</i> <sup>b</sup>	Amino acid BMAA	Yes (temporary)		+			+							
<i>Karenia</i> cf. <i>bicuneiformis</i> <sup>a,b</sup>	NSP toxins	No	+	+										
<i>Karenia</i> cf. <i>mikimotoi</i> <sup>b</sup>	Fish killing	No	+	+										
<i>Karenia</i> cf. <i>selliformis</i> <sup>a,b</sup>	NSP toxins	No	+	+										
<i>Karenia papilionacea</i> <sup>a,b</sup>	NSP toxins	No	+	+										
<i>Karenia</i> spp. <sup>†</sup>	NSP toxins	No	+	+							+	+	+	
<i>Lingulodinium polyedra</i> <sup>a,b</sup>	YTX/homoYTX	Yes	+	+	+	+	+	+	+		+		+	+
<i>Ostreopsis</i> cf. <i>ovata</i> <sup>a,b,a</sup>	PLTXs	Yes							+		+			
<i>Ostreopsis</i> spp. <sup>9a</sup>	PLTXs	Yes		+										
<i>Phaeoacoma mitra</i> <sup>a,b</sup>	DSP toxins	No/unknown	+	+			+			+	+		+	
<i>Phaeoacoma rotundatum</i> <sup>a,b</sup>	DSP toxins	No/unknown	+	+	+		+	+	+	+	+	+	+	+
<i>Prorocentrum</i> cf. <i>emarginatum</i> <sup>a,b,a</sup>	Likely to present a potential danger	Yes												+
<i>Prorocentrum cordatum</i> <sup>a,b</sup>	High biomass/TTXs (?)	Yes	+	+	+	+	+		+	+	+	+	+	+
<i>Prorocentrum lima</i> <sup>a,b,a</sup>	DSP toxins+Clisj	Yes		+	+		+				+			+
<i>Prorocentrum rhathymum</i> <sup>a,b,a</sup>	DSP toxins+Clisj	No/unknown		+										+
<i>Protoceratium reticulatum</i> <sup>a,b</sup>	YTX/homoYTX	Yes	+	+			+						+	+

Table 1.2.

Name	Harmful effect	Resting stage	AN	BI	BA	DU	KO	PL	PU	RI	ST	SI	TS	VE
0.5														
Haptophyta														
<i>Chrysochromulina</i> spp. <sup>b</sup>	Fish killing (?)	Probably	+	+				+			+	+		
0.5														
Ochromytha														
<i>Dityocha speculum</i> <sup>b</sup>	Fish killing	Probably		+	+		+	+	+	+		+	+	+
<i>Vidictus globosus</i> <sup>a,b</sup>	Fish killing	Unknown	+	+										
<i>Heterosigma akashiwo</i> <sup>a,b</sup>	Fish killing/NSP toxins	Yes												+
0.5														
Bacillariophyta														
<i>Chaetoceros convolutus</i> <sup>b</sup>	Fish killing	Unknown			+	+		+	+		+			
<i>Chaetoceros debilis</i> <sup>b</sup>	Fish killing	Yes							+	+				
<i>Chaetoceros peruvianus</i> <sup>b</sup>	Fish killing	Unknown		+					+	+	+	+	+	
<i>Chaetoceros wighamii</i> <sup>b</sup>	Fish killing	Yes					+	+	+	+	+			
<i>Halamphora</i> cf. <i>coffeiformis</i> <sup>a,h</sup>	ASP toxin	Unknown												+
<i>Pseudo-nitzschia</i> cf. <i>calliantha</i> <sup>a,b</sup>	ASP toxin	No					+							
<i>Pseudo-nitzschia delicatissima</i> <sup>a,b</sup>	ASP toxin	No							+	+				+
<i>Pseudo-nitzschia fraudulenta</i> <sup>a,b</sup>	ASP toxin	No							+					
[ <i>Pseudo-nitzschia</i> cf. <i>fraudulenta</i> ]	ASP toxin	No												+
<i>Pseudo-nitzschia galaxiae</i> <sup>a,b</sup>	ASP toxin	No												+
[ <i>Pseudo-nitzschia</i> cf. <i>galaxiae</i> ]	ASP toxin	No											+	
<i>Pseudo-nitzschia multistrata</i> <sup>a,b</sup>	ASP toxin	No					+						+	+
<i>Pseudo-nitzschia pungens</i> <sup>a,b</sup>	ASP toxin	No	+	+										+
<i>Pseudo-nitzschia seriata</i> <sup>a,b</sup>	ASP toxin	No							+	+				
<i>Pseudo-nitzschia</i> spp. <sup>†</sup>	ASP toxin	No	+	+	+	+	+	+	+	+	+	+	+	+

Table 2 – NIS found in the ports in the Adriatic Sea

NIS	AN	BI	BA	DU	KO	PL	PU	RI	ST	SI	TS	VE
<i>Bacillariophyta</i>												
<i>Didymospheniageminata</i> <sup>a</sup>												+
<i>Pseudo-nitzschia multistriata</i>					+						+	+
<i>Skeletonema tropicum</i>	+											+
0.5												
<i>Dinophyceae</i>												
<i>Ostreopsis cf. ovata</i>							+		+			
<i>Ostreopsis</i> sp.		+										
1.0												
<i>Bacillariophyta</i>												
<i>Amphora alata</i>		+										
<i>Amphora</i> cf. <i>proboscidea</i>		+										
cf. <i>Campylodiscus noricus</i>	+	+										
<i>Chaetoceros</i> cf. <i>pseudodichaetus</i>					+							
<i>Plagiodiscus enervatus</i>						+						
<i>Skeletonema grevillei</i>							+	+				
<i>Thalassiosira aestivalis</i>						+						
0.5												
<i>Dinophyceae</i>												
cf. <i>Amphidoma languida</i>	+	+										
cf. <i>Azadinium caudatum</i> var. <i>margalefii</i>	+											
cf. <i>Dinophysis laevis</i>		+										
<i>Dinophysis</i> cf. <i>bibulbus</i>	+	+										
<i>Dinophysis</i> cf. <i>equalanti</i>	+	+										
<i>Dinophysis elongata</i>							+					
<i>Dinophysis rudgei</i>									+			
<i>Protoceratium</i> cf. <i>globosum</i>	+											
<i>Protoperidinium fatulipes</i>							+					
<i>Tripos</i> cf. <i>divaricatus</i>											+	+

## ANNEX 2:

### **2017 GUIDELINES FOR BALLAST WATER EXCHANGE (G6) Resolution MEPC. 288(71)**

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 Convention) together with four Conference resolutions,

NOTING that regulation A-2 of the 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-4 of the Annex to the Convention addresses the conditions under which ballast water exchange should be conducted, taking into account Guidelines developed by the Organization,

NOTING FURTHER resolution MEPC.124(53) by which the Committee adopted the *Guidelines for ballast water exchange(G6)* and resolved to keep them under review,

HAVING AGREED, at its seventieth session, to revise the Guidelines (G6) to incorporate the ballast water reporting form set out in appendix 1 of the *Guidelines for the control and management of ships' ballast water to minimize the transfer of harmful aquatic organisms and pathogens* (resolution A.868(20)),

HAVING CONSIDERED, at its seventy-first session, draft revised *Guidelines for ballast water exchange(G6)*,

1 ADOPTS the *2017Guidelines for ballast water exchange(G6)* (the 2017 Guidelines (G6)), as set out in the annex to this resolution;

2 INVITES Governments to apply the 2017 Guidelines (G6) as soon as possible, or when the Convention becomes applicable to them;

3 AGREES to keep the 2017 Guidelines (G6) under review in light of experience gained with their application;

4 REVOKES the Guidelines adopted by resolution MEPC.124(53).



## **ANNEX**

### **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 shipowners 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 raised in these Guidelines should be reflected in the ship's ballast water management plan.

### **2 DEFINITIONS**

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 "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 on board have been considered and that suitably trained personnel are on board. 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 should 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 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)*.

3.4 Where a port State requires specific information regarding the management of ballast water on a ship bound for a port, offshore terminal or anchorage area in that port State, a completed ballast water reporting form as set out in the appendix may be submitted prior to entry into that port State in a timeframe required by that port State.

#### **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% 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% 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:

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

.2 **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.

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

## **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 limitations 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 workloads 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 are 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 weather-tight 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 regulation 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 non-compliance 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 Convention, 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 suction and pipelines connecting them to ship's ballast pumps and, in the case of use of the flow through method of ballast water exchange, the openings used for release of water from the top of the tank together with overboard discharge arrangements;
2. the method of ensuring that sounding pipes are clear, and that air pipes and their non-return devices are in good order;

- .3 the different times required to undertake the various ballast water exchange operations 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**

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