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HARMFUL AQUATIC ORGANISMS IN BALLAST WATER

The continuing compelling need to amend the Guidelines for approval of ballast water management systems (G8) to ensure success of the BWM Convention

Submitted by ICS, BIMCO, INTERTANKO, INTERCARGO and WSC

SUMMARY

Executive summary: There is continuing lack of confidence that ballast water management systems type approved under the current *Guidelines for approval of ballast water management systems (G8)* will operate consistently in accordance with the Ballast Water Management (BWM) Convention's ballast water discharge standard (regulation D-2). This document discusses the rationale and need for urgent amendments to Guidelines (G8) to provide a more transparent, robust and fit for purpose testing of ballast water management systems that will give confidence to all stakeholders that type approved systems have the ability to continue to operate effectively and consistently under all normally encountered operating conditions.

Strategic direction: 2

High-level action: 2.0.1

Planned output: 2.0.1.8

Action to be taken: Paragraph 14

Related documents: MEPC 64/2/17, MEPC 64/2/18, MEPC 64/WP.8; MEPC 65/22, MEPC 65/WP.7/Rev.1; BLG 17/WP.4 and resolution MEPC.174(58)

Background

1 The shipping industry is very grateful that Assembly 28 adopted resolution A.1088(28) on *Application of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004*, and provided a pragmatic solution to the concerns that had been identified with the application schedule specified in the BWM Convention. This positive action is believed to have removed a major obstacle to the successful implementation of the BWM Convention.

2 The second major concern identified by the shipping industry for successful implementation has been with the robustness of the type approval (TA) procedure of ballast water management systems (BWMS). This concern has steadily increased with knowledge and experience with equipment that has already been type approved under the *Guidelines for approval of ballast water management systems (G8)*. Documents MEPC 64/2/17 and MEPC 64/2/18, highlighted concerns of some Member States and observers that the Guidelines (G8) need to be revised or replaced because they cannot demonstrate that approved BWMS can consistently and reliably meet the ballast water performance standard described in regulation D-2. When discussed, a majority of States at that time did not agree to review the Guidelines, and instead agreed to reinforce resolution MEPC.175(58) on *Information reporting on type approved ballast water management systems* and circular BWM.2/Circ.28. MEPC 65 subsequently agreed to the revisions of these recommendations to include the request that Administrations report additional information to the Organization when type approving BWMS and to enhance the guidance to Administrations on the type approval process to include requests for additional information from vendors.

3 Ballast water management systems that have been approved to the original guidance must be considered prototypes, with little evidence that they will work and continue working overtime and in all conditions to the standards required to pass the rigorous port State analysis now being considered. When the Convention was adopted, there was a general understanding by the shipping industry that if a ballast water management system, type approved by an Administration to approved guidelines, was purchased and operated correctly, compliance issues would not arise. The subsequent concerns that have come to light with the reliable efficacy performance of some BWMS already approved under the Guidelines (G8) has unfortunately removed confidence in the type approval process on the part of both authorities and shipowners, resulting in the demand for rigorous port State sampling and analysis. According to the adopting resolution, the purposes of the Guidelines (G8) are, inter alia, "*to 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...*" It is respectfully suggested that this goal has not yet been achieved. The supplemented guidance agreed at MEPC 65 is simply a recommendation to report the actual testing conditions and not to specify the testing required, leaving the possibility for the test conditions to be manipulated to suit the equipment being tested rather than providing a thorough and comprehensive evaluation.

4 The IMO GloBallast initiated Global TestNet forum, which is a closed forum for invited test facility representatives, convened in November 2010, has met annually but has made little progress. It was reported, following the most recent meeting in Busan, the Republic of Korea in November 2013, that this group signed a Memorandum of Understanding simply agreeing to continue discussing issues. It had been expected that this group would develop "test protocols" and the failure to do so to date gives little confidence that full transparency of the type approval testing process called for by the International Union for the Conservation of Nature (IUCN) (in document MEPC 64/2/12) will be delivered.

5 It is suggested that the only route to the robust and transparently applied type approval regime that is needed for successful implementation of the Convention will require firm instructions from the Organization.

6 The recent introduction of the United States Federal ballast water legislation has brought further complexity and confusion to the issue of testing. It is a general belief that the test protocols under the United States legislation are somewhat more thorough than the testing required under Guidelines (G8), but in practice the efficacy standards demanded are the same as in the Convention's regulation D-2. Ballast water management systems

developed to meet the BWM Convention standards should, therefore, also meet the United States requirement as the efficacy required is the same. However, there is a real concern that a number of IMO approved BWMS will not meet the United States requirements due to the more rigorous approval testing demanded by the United States legislation. This anomaly is of the greatest concern and underlines the need for a thorough review of the process in Guidelines (G8) to ensure that the environmental protection provided by type approved BWMS meets the stipulations of the Convention. For a BWMS only to be assured to perform adequately in the sterile confines of a test facility is surely not the intention of type approval, nor the intention of those States issuing Type Approval Certificates.

7 In light of all the above rationale, the authors firmly believe that the Committee's recent actions to address BWMS type approval do not solve the fundamental problem with the Guidelines (G8) testing guidelines, which is that they fail to demonstrate that type approved BWMS can in fact meet the required D-2 discharge standard under operational conditions.

8 The shipping industry has little confidence that its investment of many billions of dollars in equipment that is type approved under the Guidelines (G8) would facilitate compliance with the Convention's discharge standards worldwide.

9 Given the real concern that BWMS approved under the current Guidelines (G8) may fail to meet the D-2 discharge standard, enforcement of the D-2 standard is also an extremely significant concern to shipowners and operators. Neither a shipowner nor a port State today can be confident that systems that have received type approvals based on the current Guidelines (G8) will in fact meet the D-2 standard. It is therefore in the interest of all stakeholders that the testing protocol to be used must ensure that type approved systems will in fact meet the Convention standard and will not later be found non-compliant under normal operating conditions, leaving owners to face sanctions and the need to replace systems fitted in good faith.

Proposed solution

10 The authors suggest that the only way to satisfactorily address these very real concerns is to amend the Guidelines (G8) to provide a robust and consistently applied testing protocol that will provide confidence that type approved ballast water management systems are "fit for purpose". The Convention provides a procedure for making changes to the guidelines in regulation D-5.

11 It is recommended that BWMS should be subject to testing in all types and conditions of water normally encountered in world trade and that any limitations discovered should be clearly identified. The current, recently revised, recommendatory procedures permit a treatment system to be tested only in high and medium salinity temperate water with the Type Approval Certificate stating the following: this does not provide any indication of the actual limitations of the system. Guidelines (G8) also need to be consistently applied and the legislation should be amended to achieve this without the possibility of a test facility amending stipulated procedures and so weakening the testing appraisal. For ease of reference, the proposed amendments for enhancing Guidelines (G8) originally given in document MEPC 64/2/17 are reproduced below, together with a rationale, as the basic outline for this much needed amendment.

- .1 Testing should be performed using fresh, brackish and marine waters – the present requirement is for testing to be performed with two test waters with a salinity differential of at least 10 PSU. In effect this means that testing in fresh water can be avoided. It is now generally recognized that certain fresh

water organisms (specifically copepods) can be more resistant to some treatment processes now commonly applied in BWMS than marine water organisms and therefore the full range of salinities, which are commonly encountered during normal ship trading, should be represented to provide assurance that the system will continue to work correctly in waters of all salinities.

- .2 Testing should also consider the effect of temperature in cold and tropical waters on operational effectiveness and environmental acceptability. One BWMS has been withdrawn from the market due to residual toxicity in cold water, which was not detected during the TA testing conducted with temperate water. The possibility of residual toxicity following a chemical treatment in cold waters cannot be discounted and therefore should be checked. The efficacy of operation in both cold and tropical waters should also be verified.
- .3 Standard test organisms that challenge the treatment process should be specified for use in testing. It is a serious concern that some test facilities may select organisms with either a high natural mortality or low resistance to disturbance for convenience due to the test site location; it is essential that the treatment efficacy is sufficiently challenged to provide a real life operating scenario.
- .4 Suspended solids in test water should provide a more realistic challenge than at present. Levels of clay silt and the content of total suspended solids (TSS) in the test water should be increased. It has been found in practice that some filtration systems forming an integral part of the BWMS cannot cope with conditions prevalent in a number of areas, particularly where heavily contaminated river estuaries are the port location; as many BWMS inherently rely on the efficiency of the filtration for efficacy of treatment, the filtration phase needs to be realistically challenged under conditions reflecting the worst case real life scenarios that may be encountered.
- .5 The TA testing should not allow discounting test runs in the full-scale testing that do not meet the D-2 standard, nor should the results of test runs be "averaged". If a system under test fails the treatment efficacy requirements at any time, then it should not be granted TA. This is a root cause of concern as the present allowances provide an opportunity for systems that cannot reliably maintain the D-2 efficacy requirements to gain TA. This should also apply to test runs that fail the efficacy criteria that are discounted due to not meeting the control water validity criteria.
- .6 TA testing should realistically represent the flow rates the system is approved for. In addition the continued effectiveness during low ballast water flow rates should be verified as a BWMS will be required to operate effectively at both full flow and reduced flow such as when topping up ballast tanks and fine adjusting the ballast condition en-route."

12 If the Committee agrees to amend Guidelines (G8) or the Convention as described above, it would be unfair to penalize shipowners that in good faith have already purchased or installed type approved BWMS or to require them to remove and replace their existing type approved systems. Ships that are equipped with Guidelines (G8) based type approved systems by a specified date (date to be determined), could be deemed to

have IMO type approved systems, even after new testing protocols have been adopted, for the remaining life of the system or the ship, whichever is shorter.

13 It is considered that successful implementation of the Ballast Water Management Convention depends upon confidence in the availability of type approved ballast water management systems that operate effectively and consistently under all normally encountered operating conditions. This can only be assured by the introduction of an enhanced and consistently applied type approval testing regime.

Action requested of the Committee

14 The Committee is invited to consider the problems identified, the proposed solution and to decide as appropriate.
