

SUB-COMMITTEE ON POLLUTION  
PREVENTION AND RESPONSE  
8th session  
Agenda item 11

PPR 8/11/2  
29 January 2021  
Original: ENGLISH  
Pre-session public release:

## ANY OTHER BUSINESS

### Comments on document PPR 8/11

#### Submitted by France and IACS

#### SUMMARY

*Executive summary:* This document comments on the revised proposed protocol contained in annex to document PPR 8/11 by Canada et al.

*Strategic direction, if applicable:* 1

*Output:* 1.25

*Action to be taken:* Paragraph 13

*Related document:* PPR 8/11

#### Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.5 of the *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.2), and provides comments on document PPR 8/11 submitted by Canada et al.

#### Background

2 The co-sponsors thank all participants of the informal group for their cooperation and constructive approach and offer some improvements to the draft protocol as discussed below.

#### Discussion

3 Section 2 of the proposed protocol for the verification of ballast water compliance monitoring devices (CMDs) states:

"...These devices may be used for a variety of purposes: during commissioning testing of ballast water management systems (BWMS), as data are collected during the experience-building phase (EBP) of the BWM Convention, during port State control inspections, and during ships' self-monitoring. ...".

4 It is understood that the use of a CMD is always envisaged to be the analysis of treated ballast water. Therefore, the testing of a CMD should be conducted using samples of treated and untreated (or partly treated) ballast water. This testing will evaluate the ability of a CMD to differentiate between live/dead and viable/non-viable organisms, when analysing ballast water with a mixture containing those organisms. Therefore, it is proposed that paragraph 2.4 and the chapeau of table 1 of the proposed protocol be modified as follows:\*

"4 the protocol primarily intends to validate the device's ability to measure groups of viable organisms in ballast water. However, it is to be noted that the ballast water may consist with mixture of dying, dead and surviving organisms. The ability of the device to differentiate the viable and non-viable organism is to be evaluated, as applicable;

.4bis CMDs may consist of their own components and apparatus for preparing the sample for measurement, including, but not limited to, sample collection, filtering, sieving, incubation, etc. Additional validation may be required for those functions using accepted methods, similar to those used when type approving BWMS. Separate validation may be needed if such components/apparatus they are not integral to the CMD and sold as part of the device; ...";

"... (3) quantify organisms across a range of concentrations and different living stages (e.g. not only determine gross non-compliance). ...".

5 Paragraph 2.8 of the proposed protocol addresses the criteria for CMD testing facilities. It is recommended to clarify the scope of ISO/IEC 17025 accreditation with respect to CMD testing and to provide guidance on how to evaluate the appropriateness of ISO/IEC 17025 accredited facility for CMD testing. In addition, it may be appropriate to allow CMD test facilities to be accredited in accordance with an accepted standard equivalent to ISO/IEC 17025. Therefore, paragraph 2.8 of the proposed protocol is modified as follows (including the option of an equivalent standard – in square brackets – for further consideration):

".8 all verification of ballast water CMDs should be conducted by an independent, third-party testing facility or organization (having implemented a rigorous quality assurance/quality control programme, e.g. in accordance with ISO/IEC 17025 [or equivalent accepted standard], that is approved, certified and audited by an independent accreditation body). Although the facility or organization is working under a certified quality assurance/quality control programme, the verification procedures of CMDs may not be included in the ISO certification, therefore an independent and include expert-review of [standard operating procedures (SOPs),] specific test plans and final reports is required; and".

6 Paragraph 4.1 of the proposed protocol recommends reference standards based on those required for the type approval of BWMS when verifying the performance of CMDs. Section 5 of the same requires "prepared challenge water" to have salinity, and dissolved and particulate content, similar to that required by the BWMS Code (resolution MEPC.300(72)).

7 It is recalled that land-based testing conducted in conformity with the BWMS Code is considered to provide the data needed to determine the biological efficacy and environmental

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\* Here and further in the text, proposed changes are indicated using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.

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acceptability of the BWMS under consideration for type approval, and to enable the aim of testing of replicability and comparability between BWMSs (paragraph 2.9 of the BWMS Code).

8 Paragraph 5.2.1 of the proposed protocol restricts laboratory testing to using cultures of organisms. The co-sponsors consider that natural organisms should also be permitted. Cultured organisms of requested taxonomy may only be feasible in 10-50 µm organisms size classes; test facilities can use harvesting and grow-out techniques for organisms ≥ 50 µm size class. The use of natural organisms reduces the risk of using cultivated species which are not representative of natural species.

9 The co-sponsors opine that the dilution steps in paragraph 5.2.3 of the proposed protocol are challenging, especially for zooplankton where normal concentrations are usually significantly above 50/m<sup>3</sup>. Each dilution step should meet the water quality parameters; small quantities of augmentation to meet DOC, POC and TSS limits in the BWMS Code require gentle mixing.

10 Based on the foregoing, the co-sponsors recommend to:

- .1 allow the use of natural organisms for CMD testing;
- .2 modify the dilution steps to allow the use of treated water, whilst achieving the intent of testing the CMD in at least three different concentrations spanning levels which are above and below the discharge standard;
- .3 allow treated or untreated ballast water used for type approval in accordance with the BWMS Code, to be used as "prepared challenge water";
- .4 allow land-based testing as in paragraph 2.9 of the BWMS Code; and
- .5 take advantage of the testing arrangements already in use for approval of BWMS under the BWMS Code.

11 Additionally, it is proposed that throughout the proposed protocol references to "ambient challenge water" are modified to refer to "ambient water".

12 Therefore, the consequential modifications to sections 3 and 5 of the proposed protocol are suggested as follows:

**"3 Verification testing parameters**

... under varying conditions that represent the device's intended use. For the purpose of controlled laboratory tests, either bench scale or full scale, at a third-party testing facility may fulfil this. ...";

**"5 Experimental design**

... the organism concentrations should be adjusted to bracket the discharge standard (described below). The use of treated and untreated challenge water obtained in connection with land-based testing of BWMS can be used as 'prepared challenge water' if it meets the recommended concentrations of viable organisms. The ambient challenge water for each of the three salinities (as prescribed in the BWMS Code) should contain ambient organisms and water-quality parameters and not be manipulated. A field test is a practicability test on board a ship or a BWMS installation in a test facility to assess the ability of the device to work under real-life conditions, including a demonstration of producing accurate and reliable results in an onboard

environment. The field tests should be designed around the specific intended use and application of the compliance devices (i.e. type of treatment), be used for devices meant for use outside of controlled laboratory conditions (i.e. in the field, on board a ship, in a test facility, or integrated into a ship's ballast water management system), and only involve a small subset of parameters (see section 5.4). ...

.2 Laboratory tests using prepared challenge water:

.1 Laboratory cultures of organisms and/or natural organisms of the appropriate size can be used in these tests. For consistency at a given laboratory, healthy cultures of organisms (e.g. phytoplankton cultures in exponential growth phase) should be used, and a minimum of three relatively diverse species (e.g. from three families) should be tested together in a mixture. ...

... .3 For each group of organism size classes of organisms  $\geq 50 \mu\text{m}$  and organisms  $\geq 10 \mu\text{m}$  and  $< 50 \mu\text{m}$ , a dilution test series should be created from either a dilution series of laboratory cultures or a series of treated and untreated water samples. The test series shall contain using 0.2- $\mu\text{m}$  filtered natural/artificial seawater or freshwater with the appropriate salinity. Each dilution series should have at least three concentrations of each organisms class, with the concentrations created by diluting or concentrating the organism mix so that the dilution series that spans above and below the discharge standard. This step, and all other The steps in preparing the challenge water should be done carefully to minimize organism mortality and loss. The highest concentration of organisms should be at least 5x greater than the maximum discharge standard, but and aim for no more than 50x greater for size class  $\geq 10 \mu\text{m}$  and  $< 50 \mu\text{m}$  and no more than 500x greater for size class  $\geq 50 \mu\text{m}$ . The concentrations should anyway meet unless the range of concentrations stipulated by the CMD vendor exceeds this amount (to ensure linearity measurements for devices that do not have pass/fail outputs). ...

.3 Laboratory tests using ambient challenge water:

.1 Ambient challenge water in all three salinity ranges should not be manipulated to dilute or concentrate organisms (unless it is necessary to meet the specified range as stipulated by the CMD vendor), or manipulate temperature, salinity, DOC, POC and TSS. While these parameters should be measured and reported, ambient challenge water should simply be natural assemblages or organisms with preferably more than three different phyla/divisions in natural concentrations of organisms and natural conditions of physical and chemical parameters. ..."

### Action requested of the Sub-Committee

13 The Sub-Committee is invited to consider the foregoing, and specifically the proposals in paragraphs 4, 5 and 12, and take action as appropriate.