

SUB-COMMITTEE ON BULK LIQUIDS AND
GASES
17th session
Agenda item 4

BLG 17/4/2
30 November 2012
Original: ENGLISH

ADDITIONAL GUIDELINES FOR IMPLEMENTATION OF THE BWM CONVENTION

Further comments and details on the monitoring and sampling of certain ballast water management systems

Submitted by Germany

SUMMARY

Executive summary: This document proposes detailed self-monitoring standards for ballast water management systems (BWMS) and develops the proposals contained in document MEPC 64/2/15 (Germany) in more detail

Strategic direction: 2

High-level action: 2.0.1

Planned output: 2.0.1.8

Action to be taken: Paragraph 9

Related documents: MEPC 64/2/15 and MEPC 61/INF.19

Background

1 This document is submitted in accordance with the relaxed deadline as specified in paragraph 2.38.6 of document MEPC 64/23.

2 In document MEPC 64/2/15 Germany proposed measures to address the perceived uncertainties in the sampling regime of the BWM Convention. An excerpt of the proposals is given here for ease of reference:

- "8 In light of these considerations, Germany submits the following proposals:
- .1 The Committee agrees on common standards for the control and monitoring of BWMS, on the basis of Guidelines (G8), paragraphs 4.10 to 4.14.
 - .2 After the entry into force of the Convention, samples are taken and analysed in accordance with Guidelines (G2). The analysis results are not used as the only basis for sanctioning, but should be collected and evaluated by BLG Sub-Committee with the clear aim

to develop a sampling and analysing system that delivers unambiguous results. This may lead to the modification of Guidelines (G2). The modification of Guidelines (G8) and (G11) should also be taken into consideration. The proposal under paragraph 3 below ensures that possible measures developed under this paragraph do not adversely affect type-approved ballast water management systems in accordance with the current guidelines.

- .3 If a violation of the requirements of the Convention occurs in case of a ship which has on board a type-approved ballast water management system installed before [2015] [2016] and the system has been duly maintained, operated, and monitored in accordance with Guidelines (G8), standards developed under subparagraph 1 above, and any requirements set by the Administration or Organization, and the violation was detected solely on the basis of inspection according to article 9, paragraph 1(c) (i.e. a sampling of the ship's ballast water in accordance with Guidelines (G2)), Parties to the Convention agree to exercise their discretion under article 8, paragraph 2, by furnishing to the Administration of the ship such information and evidence as may be in its possession that a violation has occurred.

9 As a result, for ships that meet the requirements stated in paragraph 8, port States would refrain from initiating proceedings in accordance with their laws on the basis of sampling the ballast water discharge alone. Proceedings could still be taken if other violations of the Convention occur, such as lack of a Certificate, wrongful entries in the Ballast Water Record Book, operation of the system outside its parameters, lack of monitoring, etc.

10 Sampling of the ballast water discharge according to article 9, paragraph 1(c), would still be necessary as the results can lead to enforcement measures by the flag Administrations under article 8, paragraph 1. Parties to the Convention could still take preventive measures under article 10, e.g. the prohibition of discharge according to article 10, paragraph 3, if sampling leads to the result that the ship poses a threat to the environment, human health, property, or resources of its waters. Nevertheless, the above proposals would prevent even the possibility – however remote – of random criminalization in the absence of agreed sampling procedures."

3 MEPC 64 instructed BLG 17 to further develop the proposals made in document MEPC 64/2/15 and invited Member States and observers to submit relevant comments in this respect.

Monitoring standards for ballast water management systems

4 The proposal in document MEPC 64/2/15 did not contain details on the monitoring of BWMS. Germany proposes that Administrations issue a Treatment System Particulars (TSP) document as described in document MEPC 61/INF.19 (Australia) for each system they have approved. In addition to the information outlined in document MEPC 61/INF.19, the document should contain the information specified in the annex to this document.

5 BWMS should perform self-monitoring according to the standards in the annex to this document.

Sampling for compliance

6 In line with the proposal in document MEPC 64/2/15 the following principles may then be applied by Administrations:

- .1 Administrations that sample ships for compliance with the standard described in regulation D-2 of the Convention are urged to send the sampling results to the Organization for collection and evaluation.
- .2 if a BWMS was installed on a ship before [2016] and:
 - .1 the system has been duly maintained and operated in accordance with all relevant requirements;
 - .2 the BWMS uses a self-monitoring system according to the annex to this document and a TSP for the system on board; and
 - .3 all relevant documentation for the ballast water management of the ship is in good order;

the ship and its crew should not be subject to criminal sanctions under article 8, paragraph 2 (a) of the Convention if the only indication of a violation of the Convention is a sample of the ship's ballast water taken under article 9, paragraph 1(c) of the Convention. However, a report of such a sampling result should be sent to the flag State of the ship and the Organization.

- .3 subparagraph .2 above does not prevent the Member State from taking preventive measures to protect its environment, human health, property or resources.
- .4 this recommendation addresses only systems installed until [2016] and it expires in [2026].

Way forward

7 Germany considers that an MEPC or Assembly resolution expressing consensus on the concepts of paragraph 6 might be an appropriate way forward.

8 For the central collection of sampling data, the Secretariat could be requested to explore options on how such data could be collected and stored by the Organization, bearing in mind that the collection might be necessary for several years.

Action requested of the Sub-Committee

9 The Sub-Committee is invited to consider the proposals and decide as appropriate.

ANNEX

Germany proposes to combine the self-monitoring of ballast water management systems (BWMS) with the approach outlined in document MEPC 61/INF.19 (Australia).

Treatment System Particulars (TSP) issued by the Administration should include self-monitoring parameters and their acceptable range.

Systems should monitor and store a minimum number of parameters for detailed evaluation by the port State (1). In addition, all system indications and alarms should be stored and available for inspection (2). Storage should follow common standards (3).

Appendix 1 gives more technical detail on the proposed monitoring parameters.

1 Monitoring of parameters

The parameters listed under 1.1 below should be used for every system. The parameters under 1.2 should be used for those systems which they are applicable for. Any additional parameters that are necessary to ascertain system performance and safety should be determined by the Administration stored in the system and listed under 1.3 in the TSP.

The acceptable range for all parameters should be determined by the manufacturer and approved by the Administration. If a parameter is not applicable due to the particulars of the system, the Administration can waive the requirement to record that parameter.

1.1 General information for all systems

1.1.1 General information

- Ship name
- IMO number
- Ballast water management system manufacturer and type designation
- [Serial number]
- [Year of installation]
- Treatment rated capacity (TRC)

1.1.2 Operational parameters

- BWMS in operation (uptake/discharge)
- Ballast water pump in operation
- Ballast water flow rate at ballast water pump

1.2 Method specific information

The information needed is determined by the basic principle of operation of the system. This category can be amended if new system categories are developed. More than one category may apply to one system. Depending on the system, some parameters may be redundant (e.g. 1.2.1 flow rate post filtration into system and 1.2.2 ballast water flow rate into system). In such a case, one measurement can be used for both parameters.

1.2.1 Filtration

- Flow rate pre-filtration
- Flow rate post filtration to system/tank
- Pressure difference pre/post-filtration

1.2.2 Disinfection: electrolysis systems

- Ballast water flow rate into system*
- Water temperature*
- Water conductivity*
- Total current
- Total voltage
- TRO after electrolysis
- TRO before discharge*

1.2.3 Disinfection: direct dosage systems

- Ballast water flow rate into system*
- Active Substance/Preparation 1 flow rate*
- Active Substance/Preparation 2 flow rate*
- Discharge concentration*

1.2.4 Disinfection: UV-systems

- Ballast water flow rate into system*
- Transmittance*
- Relative UV-sensor value at every reactor

1.2.5 Neutralization Unit

- Concentration of substance 1 to be neutralized before neutralization
- Concentration of substance 2 to be neutralized before neutralization
- Concentration of substance 1 at discharge*
- Concentration of substance 2 at discharge*
- Flow rate of neutralizing agent
- Ballast water discharge flow rate

1.3. System specific additional information

The Administration should require any additional important information to be monitored, that due to the particular operation of the system is relevant but not mentioned above. Also, if a system uses a new method of operation, the monitoring information should be determined by the manufacturer and accepted by the Administration under this heading until the Organization has amended this document.

2 System alarms and indications

2.1 General alarms

- Shutdown of system while in operation
- Maintenance required
- [Bypass valve status]

2.2 Operational alarms

Whenever a parameter marked with an asterisk under 1.2 is outside its acceptable range approved by the Administration, the system should give an alarm and store the event.

In addition the following parameters shall be monitored and alarmed:

2.2.1 Filtration

- Combination of relevant parameters exceeds system specifications, as determined by the Administration

2.2.2 Electrolysis

- Hydrogen level at appropriate measurement point exceeds system specifications as determined by the Administration
- pH at discharge exceeds system specifications as determined by the Administration

3 Storage and retrieval

Storage of data should follow these requirements:

3.1 The system shall automatically store the required data without user interaction and add a time stamp to every entry.

3.2 The equipment shall be so designed that, as far as is practical, it is not possible to manipulate the data being stored by the system or the data which has already been recorded. Possible solutions could include e.g. a proprietary file system, binary data formats, data encryption or software certificate management etc. Any attempt to interfere with the integrity of the data should be recorded.

3.3 Permanent deletion of recordings shall not be possible.

3.4 The system shall be capable of storing recorded data for at least [30 days].

3.5 For access by administrations, investigators etc. the system shall be able to export recorded data for a specified time period.

- .1 in an internationally standardized readable format (e.g. Text format, jpg, pdf, etc.) to a mobile storage medium that is commercially available (caots e.g. USB-stick);
- .2 [for automatic evaluation in an xml-format as specified in the annex]

3.6 If navigation equipment is connected to the monitoring system to provide data for recording, the interfaces shall comply with applicable parts of IEC 61162.

3.7 [A data interface shall be provided to transfer tbd. data to a VDR (according to resolution MSC.333(90))]

Appendix

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
1.1	General information for all systems					
1.1.1	General information					
	Ship name	free text; length: 0-100				
	IMO number	number				
	Ballast water management system, manufacturer and type designation	free text; length: 0-100				
	[Serial number]	free text; length: 0-100				
	[year of installation]	number	YYYY			
	Treatment rated capacity (TRC)	number	m ³ /h			
1.1.2	Operational parameters					
	(over time, blocks are repeated for every recording when BWMS is in operation)					
	BWMS operation (<u>starts recording of "over time" parameters</u>)	Text: upt/dis/off			system status on/off; uptake or discharge	
	Position of ship	Position (lat/lon)	GPX			10 min
	Ballast water pump 1	Text: on/off				10 min
	Ballast water pump 2	Text: on/off				10 min
	(repeated for additional pumps)					
	Overall ballast water flowrate	number (positive/negative)	m ³ /h	10	negative number indicates discharge	10 min

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
1.2	Method specific information					
	(over time, blocks are repeated for every recording; blocks used as applicable for the specific system)					
1.2.1	Filtration					
	Time tag	number	yymmddhhmmss			1 min
	Flow rate pre filtration	number	m ³ /h	10		1 min
	Flow rate post filtration to system/tank	number	m ³ /h	10		1 min
	Pressure difference pre/post-filtration	number	Pa	5	indicates filtration effectivity	1 min
1.2.2	Disinfection: electrolysis systems					
	time tag	number	yymmddhhmmss			10 min
	Ballast water flow rate into system*	number	m ³ /h	10		10 min
	Water temperature*	number	°C	10		10 min
	Water conductivity*	number	S/m	10		10 min
	Total current	number	A	10		10 min
	Total voltage	number	V	10		10 min
	TRO after electrolysis	number	mg/l	20		10 min
	TRO before discharge*	number	mg/l	20		10 min

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
1.2.3	Disinfection: direct dosage Systems					
	Time tag	number	yymmddhhmmss			10 min
	Ballast water flow rate into system*	number	m ³ /h	10		10 min
	Active Substance/Preparation 1 flow rate*	number	l/h	10		10 min
	Active Substance/Preparation 2 flow rate*	number	l/h	10		10 min
	Discharge concentration*	number	mg/l	10		10 min
1.2.4	Disinfection: UV-systems					
	Time tag	number	yymmddhhmmss			10 min
	Ballast water flow rate into system*	number	m ³ /h	10		10 min
	Transmittance*	number	% UVT per 10 mm	10		10 min
	Relative UV sensor value at every reactor	number	%	10	% of optimum measurement of UV radiation sensor	10 min
1.2.5	Neutralization unit					
	Time tag	number	yymmddhhmmss			10 min
	Concentration of substance 1 to be neutralized before neutralization	number	mg/l	10		10 min

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
	Concentration of substance 2 to be neutralized before neutralization	number	mg/l	10		10 min
	Concentration of substance 1 at discharge*	number	mg/l	10		10 min
	Concentration of substance 2 at discharge*	number	mg/l	10		10 min
	Flow rate of neutralizing agent	number	l/h	10		10 min
	Ballast water discharge flow rate	number	l/h	10		10 min
1.3	System specific additional information					
	The administration should require any additional important information to be monitored that due to the particular operation of the system is not mentioned above. Also, if a system uses a new method of operation, the monitoring information should be determined by the manufacturer and accepted by the Administration under this heading until the Organization has amended this document.					
2	System alarms and indications					
	Alarms shall be recorded upon change of status together with a time tag and status flag (status flag 2Bit: active/unacknowledged; active/acknowledged; inactive/unacknowledged; inactive/acknowledged)					
2.1	General alarms					
	Shutdown of system while in operation	free text; length: 0-100			time tag [yymmddhhmmss], status	
	Maintenance required	free text; length: 0-100			time tag [yymmddhhmmss], status	
	[Bypass valve status (open/close)]	free text; length: 0-100			time tag [yymmddhhmmss], status	

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
2.2	System specific alarms					
	Alarms raised when parameters measured at appropriate measurement points as above exceed system specifications as determined by the manufacturer and accepted by the administration					
2.2.1	Filtration					
	Pressure difference	free text; length: 0-100			time tag [yymmddhhmmss], status (optional, as appropriate)	
	Combination of relevant parameters exceeds system specifications, as determined by the Administration	free text; length: 0-100				
2.2.2	Electrolysis					
	Hydrogen level	free text; length: 0-100			time tag [yymmddhhmmss], status	
	Ballast water flow rate into system	free text; length: 0-100			time tag [yymmddhhmmss], status	
	Water temperature	free text; length: 0-100			time tag [yymmddhhmmss], status	
	Water conductivity	free text; length: 0-100			time tag [yymmddhhmmss], status	
	pH at discharge	free text; length: 0-100			time tag [yymmddhhmmss], status	
	TRO at discharge	free text; length: 0-100			time tag [yymmddhhmmss], status	
2.2.3	Direct dosage systems					
	Ballast water flow rate into system*	free text; length: 0-100			time tag [yymmddhhmmss], status	

		Parameter type	unit	Accuracy in %	Remarks	Resolution in time
	Active Substance 1 flow rate	free text; length: 0-100			time tag [yymmddhhmmss], status	
	Active Substance 2 flow rate	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
	Discharge concentration	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
2.2.4	UV-systems					
	Ballast water flow rate into system	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
	Transmittance	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
	UV radiation at every reactor	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
2.2.5	Neutralization unit					
	Concentration of substance 1 at discharge	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	
	Concentration of substance 2 at discharge	free text; no. of characters: 0-100			time tag [yymmddhhmmss], status	