

Subject

Summary of the outcomes of MEPC 75

# **ClassNK**

## **Technical Information**

No. TEC-1228  
Date 9 February 2021

To whom it may concern

The seventy-fifth session of the Marine Environment Protection Committee (MEPC 75) was held from 16 to 20 November 2020 as a web conference due to the pandemic of COVID-19.

A summary of the discussions and the decisions taken at MEPC 75 is provided as below for your information.

1. Greenhouse Gases (GHG) emission reduction measures

Measures to reduce GHG emissions from international shipping have been deliberated at IMO and the Energy Efficiency Design Index (EEDI), the Ship Energy Efficiency Management Plan (SEEMP) and the Data Collection System for fuel oil consumption of ships (DCS) have been introduced so far. Further, at MEPC 72 held in 2018, the Initial IMO Strategy on reduction of GHG emissions from ships, which includes the emission reduction targets and candidate measures to reduce GHG emissions, was adopted.

(1) Review of the status of technological developments for EEDI

Regulation 21.6 of MARPOL Annex VI sets out that a review of the status of technological developments which may contribute to the improvement of EEDI should be conducted. It also requires to amend the subsequent requirements related to time periods and reduction rates, if proven necessary.

(i) Strengthening EEDI phase 3 requirements

Amendments to MARPOL Annex VI to strengthen the EEDI phase 3 requirements were adopted as follows: (Refer to Res. MEPC.324(75) as attachment 1)

- For general cargo ships, LNG carriers and cruise passenger ships, the effective date is moved forward from 2025 to 2022 with the reduction rate of 30%;
- For containerships, the effective date is moved forward from 2025 to 2022 and the reduction rate is strengthened based on the ship sizes as follows; and

(To be continued)

NOTES:

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DWT	Reduction rate
10,000 and above but less than 15,000 DWT	15-30%
15,000 and above but less than 40,000 DWT	30%
40,000 and above but less than 80,000 DWT	35%
80,000 and above but less than 120,000 DWT	40%
120,000 and above but less than 200,000 DWT	45%
200,000 DWT and above	50%

- For gas carriers (e.g. LPG carriers) with 15,000DWT and above, the effective date is moved forward from 2025 to 2022 with the reduction rate of 30%. For gas carriers (e.g. LPG carriers) below 15,000DWT, the current effective date of 2025 and the reduction rate are retained;
- For ship types other than the above, the current effective date of 2025 and the reduction rate are retained.

(ii) Adjustment of the reference line for very large bulk carriers

Recognizing that EEDI requirements for very large bulk carriers as being too stringent, the amendments to MARPOL Annex VI to adjust the reference line for very large bulk carriers more than 279,000DWT were adopted.

(Refer to Res. MEPC.324(75) as attachment 1)

(iii) Introduction of possible EEDI phase 4 requirements

MEPC 74 established a correspondence group (CG), coordinated by Japan, to consider the possible introduction of phase 4.

At this session, the interim report of the CG was submitted. The CG collated and analysed the information on new technologies and alternative fuels for the improvement of energy efficiency and considered how EEDI phase 4 can contribute to the 2050 target of the Initial Strategy on reduction of GHG emissions from ships. The CG will continue the discussion and submit its final report to MEPC 76.

(2) Requirements of minimum propulsion power and EEDI

At MEPC 65, the Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions were developed in order to avoid the construction of extremely under-powered ships. At MEPC 71, it was agreed to extend the Interim Guidelines to phase 2 of EEDI regulation. Meanwhile, the consideration on the strengthening of the phase 3 requirements continued. Under these circumstances, concerns were raised that the requirements of minimum propulsion power in the Guidelines might become a barrier for meeting the phase 3 requirements.

(To be continued)

At MEPC 74, to address potential conflicts between EEDI and minimum propulsion power requirements, a proposal to introduce a concept of shaft/engine power limitation was considered and generally accepted. For further discussion to improve the concept, it was agreed to consider this matter at a future session. It was also agreed to proceed with the revision work for the finalization of the Interim Guidelines in parallel to the above consideration.

At this session, due to time constraints, it was not possible to consider the above matters. MEPC 75 agreed to consider these issues by a CG towards MEPC 76.

(3) IMO strategy on reduction of GHG

The Initial IMO Strategy on reduction of GHG emissions from ships, adopted at MEPC 72, specifies short-term target by 2030 and mid/long-term target by 2050. While short-term measures for new ships can be addressed by strengthening the EEDI requirements, the consideration on the short-term measures for existing ships has been ongoing at MEPC as an urgent issue.

At this session, the draft amendments to MARPOL Annex VI were approved to incorporate short-term measures composed of (i) Technical Approach and (ii) Operational Approach agreed at an intersessional meeting held in October 2020.

(i) Outlines of Technical Approach (EEXI)

- Attained Energy Efficiency Existing Ship Index (EEXI) for each existing ship should be calculated using similar formula as EEDI.
- Required EEXI for each existing ship should be calculated using EEDI reference lines for each category of ships by multiplying reduction factor.
- If the attained EEXI value cannot satisfy the required EEXI, the ship should implement any countermeasures, such as shaft/engine power limitation etc.

(ii) Outlines of Operational Approach (CII):

- IMO will develop the Guidelines on required annual operational Carbon Intensity Indicator (CII), and the Guidelines for calculation and verification of the attained annual CII and the CII rating of ships.
- It should be specified in SEEMP on calculation methods for the attained annual CII and reporting procedures for the attained annual CII to the ship's flag Administration for verification.
- Based on the reported CII, the ship's flag Administration rates the ship on scale of A to E.
- Ships rated as D for three consecutive years or rated as E shall develop corrective actions to improve the CII.
- Flag Administrations and port States may provide incentives to ships rated as A or B.

These draft amendments will be adopted at MEPC 76 to be held in June 2021 and will enter into force at the beginning of 2023. To develop the relevant Guidelines on EEXI and CII, MEPC 75 agreed to hold an intersessional meeting before MEPC 76.

(To be continued)

## (4) Mid/long-term measures for reduction of GHG

In order to achieve mid/long-term target specified in the Initial IMO Strategy, it is necessary to establish mid/long-term measures for the encouragement of the de-carbonization of shipping.

At this session, it was proposed to increase the level of ambition in the Initial IMO GHG Strategy and initiate discussions as soon as possible on mid- and long-term measures. However, this proposal was not agreed at this session in order to prioritize the consideration of short-term measures.

At the same time, it was proposed to establish an International Maritime Research and Development Board (IMRB) and an International Maritime Research Fund (IMRF) to provide the structure, direction and funding necessary for the successful development of low-carbon and zero-carbon technologies. It was also proposed to establish market-based measures (MBMs) to incentivize GHG emission reduction from shipping. As a result of the discussion, MEPC 75 agreed to continuously consider these proposals at a future session.

## (5) IMO GHG Study

At MEPC 74, it was agreed to develop the Fourth IMO GHG Study 2020, which estimates the amount of GHG emissions from shipping and the development work has been carried out.

At this session, the outcome of the work was submitted/reported and approved as the Fourth IMO GHG Study 2020.

- CO<sub>2</sub> emissions from international shipping in 2018 was 919 million tonnes, which was 8.4% increase from 2012 and almost at the same level as 2008 emissions.
- CO<sub>2</sub> emissions from shipping as of 2050 will be equal to 90-130% of 2008 emissions if no further countermeasures to reduce CO<sub>2</sub> emissions are taken.

## 2. BWM Convention - Commissioning of Ballast Water Management Systems (BWMS) -

At MEPC 74, the draft amendments to the BWM Convention to specify the requirements to conduct commissioning testing, sampling and analysis were approved.

At this session, the amendments to BWM Convention were adopted.

MEPC 75 further adopted the amendments to the Guidance for the commissioning testing of ballast water management systems (BWM.2/Circ.70). The revised Guidance specifies the following items:

- The purpose of commissioning testing, sampling and analysis is to validate the installation of BWMS properly;
- Local ambient water should be used for testing regardless of the organism concentrations in the water; and
- Representative samples should be analysed for two size classes of organisms as specified in the D-2 standard, namely,  $\geq 50 \mu\text{m}$  and  $\geq 10 \mu\text{m}$  to  $< 50 \mu\text{m}$ , using indicative analysis methods. Analysis for microbes is not required.

(Refer to Res. MEPC.325(75) and BWM.2/Circ.70/Rev.1 as attachment 2 and 3)

(To be continued)

### 3. Control of Harmful Anti-fouling Systems on Ships (AFS Convention)

The AFS Convention entered into force in 2008 to prohibit the use of harmful organotin (TBT) in anti-fouling paints used on ships.

At MEPC 74, it was agreed in principle to prohibit the use of anti-fouling paints that contains cybutryne under the AFS Convention. Moreover, MEPC 74 recognized that further consideration was necessary on controls of cybutryne already used on board existing ships.

At this session, the draft amendments to the AFS Convention to prohibit the use of anti-fouling paints that contain cybutryne were approved. For controls of cybutryne already used on board existing ships, it was agreed to specify the following requirements in the draft amendments to the AFS Convention:

- Ships bearing an anti-fouling system that contains cybutryne in the external coating layer of their hulls shall either remove the anti-fouling system or apply a coating that forms a barrier to cybutryne;
- For ships of less than 400 gross tonnage engaged in international voyages, if accepted by the coastal States, no action is required; and
- For ships not engaged in international voyages, no action is required.

Based on the above requirements, for ships bearing anti-fouling systems that don't contain cybutryne in the external coating layer of their hulls, no action is required.

### 4. Others

#### (1) Heavy fuel oil in Arctic waters

MEPC 72, held in 2018, recognized that the most significant threat to the Arctic marine environment is the release of oil through accidental or illegal discharge from ships. PPR Sub-Committee has considered measures to reduce the risks of use and carriage of heavy fuel oil as fuel by ships in the Arctic waters.

At this session, the draft amendments to MARPOL Annex I were approved to prohibit the use and carriage of heavy fuel oil as fuel by ships in the Arctic waters. The draft amendments will be adopted at MEPC 76. The carriage of heavy fuel oil as cargo will not be subject to the prohibition.

### 5. Amendments to mandatory instruments

MEPC 75 adopted the amendments to mandatory instruments as follows:

#### (1) EEDI phase 3 requirements (Refer to paragraph 1.(1) (i))

- Amendments to MARPOL Annex VI to strengthen the EEDI phase 3 requirements.

Entry into force: 1 April 2022

(To be continued)

- (2) Reference line for large bulk carriers (Refer to paragraph 1.(1) (ii))
- Amendments to MARPOL Annex VI to adjust the reference line for very large bulk carriers more than 279,000DWT

Entry into force: 1 April 2022

- (3) Sampling of fuel oil used on board
- Amendments to MARPOL Annex VI to specify the requirements on the sampling of "in use sample", meaning a sample of fuel oil in use on a ship, and of "on board sample", meaning a sample of fuel oil intended to be used or carried for use on board that ship
  - Amendments to Appendix VI of MARPOL Annex VI to specify the verification procedures for the sulphur contents of the fuel oil samples  
(Refer to Res. MEPC.324(75) and MEPC.1/Circ.889 as attachment 1 and 4)

Entry into force: 1 April 2022

- (4) Commissioning of Ballast Water Management Systems (BWMS) (Refer to paragraph 2.)
- Amendments to the BWM Convention to specify the requirements to conduct a commissioning test including sampling and analysis

Entry into force: 1 June 2022

A summary of the outcomes of MEPC 75 is also available on the IMO website.  
<https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-default.aspx>

For any questions about the above, please contact:

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Attachment:

1. Res. MEPC.324(75)
2. Res. MEPC.325(75)
3. BWM.2/Circ.70/Rev.1
4. MEPC.1/Circ.889

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**ANNEX 1**

**RESOLUTION MEPC.324(75)  
(adopted on 20 November 2020)**

**AMENDMENTS TO THE ANNEX OF THE PROTOCOL OF 1997 TO AMEND THE  
INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS,  
1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO**

**Amendments to MARPOL Annex VI**

**(Procedures for sampling and verification of the sulphur content of fuel oil and  
the Energy Efficiency Design Index (EEDI))**

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 article 16 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocols of 1978 and 1997 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering amendments thereto for adoption by the Parties,

RECALLING FURTHER that MEPC.1/Circ.882 had requested the Parties to apply the amendments to appendix VI of MARPOL Annex VI related to the verification procedure for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8) in advance of their entry into force,

HAVING CONSIDERED, at its seventy-fifth session, proposed amendments to MARPOL Annex VI concerning procedures for sampling and verification of the sulphur content of fuel oil and the Energy Efficiency Design Index (EEDI), which were circulated in accordance with article 16(2)(a) of MARPOL,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to MARPOL Annex VI, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article 16(2)(f)(iii) of MARPOL, that the amendments shall be deemed to have been accepted on 1 October 2021 unless prior to that date, not less than one third of the Parties or Parties the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world's merchant fleet, have communicated to the Organization their objection to the amendments;

3 INVITES the Parties to note that, in accordance with article 16(2)(g)(ii) of MARPOL, the said amendments shall enter into force on 1 April 2022 upon their acceptance in accordance with paragraph 2 above;

4 INVITES ALSO the Parties to consider the early application of the annexed amendments;

5 REQUESTS the Secretary-General, for the purposes of article 16(2)(e) of MARPOL, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to MARPOL;

6 REQUESTS ALSO the Secretary-General to transmit copies of the present resolution and its annex to Members of the Organization which are not Parties to MARPOL.

ANNEX

**AMENDMENTS TO MARPOL ANNEX VI**

**(Procedures for sampling and verification of the sulphur content of fuel oil and the Energy Efficiency Design Index (EEDI))**

**Regulation 1**

*Application*

- 1 The full text of regulation 1 is replaced by the following:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise."

**Regulation 2**

*Definitions*

- 2 New paragraphs 52 to 56 are inserted after paragraph 51, as follows:

"52 *Sulphur content of fuel oil* means the concentration of sulphur in a fuel oil, measured in % m/m as tested in accordance with a standard acceptable to the Organization.<sup>1</sup>

53 *Low-flashpoint fuel* means gaseous or liquid fuel oil having a flashpoint lower than otherwise permitted under paragraph 2.1.1 of regulation 4 of chapter II-2 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended.

54 *MARPOL delivered sample* means the sample of fuel oil delivered in accordance with regulation 18.8.1 of this Annex.

55 *In-use sample* means a sample of fuel oil in use on a ship.

56 *On board sample* means a sample of fuel oil intended to be used or carried for use on board that ship."

**Regulation 14**

*Sulphur oxides (SO<sub>x</sub>) and particulate matter*

- 3 New paragraphs 8 to 13 and associated headings are inserted after existing paragraph 7 as follows:

**"In-use and onboard fuel oil sampling and testing**

8 If the competent authority of a Party requires the in-use or onboard sample to be analysed, it shall be done in accordance with the verification procedure set forth in appendix VI to this Annex to determine whether the fuel oil being used or carried for use on board meets the requirements in paragraph 1 or paragraph 4 of this regulation. The in-use sample shall be drawn taking into account the guidelines

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<sup>1</sup> Refer to ISO 8754:2003 Petroleum products – Determination of sulphur content – Energy-dispersive X-ray fluorescence spectrometry.

developed by the Organization.<sup>2</sup> The onboard sample shall be drawn taking into account the guidelines developed by the Organization.<sup>3</sup>

9 The sample shall be sealed by the representative of the competent authority with a unique means of identification installed in the presence of the ship's representative. The ship shall be given the option of retaining a duplicate sample.

#### **In-use fuel oil sampling point**

10 For each ship subject to regulations 5 and 6 of this Annex, sampling point(s) shall be fitted or designated for the purpose of taking representative samples of the fuel oil being used on board the ship taking into account the guidelines developed by the Organization.<sup>2</sup>

11 For a ship constructed before 1 April 2022, the sampling point(s) referred to in paragraph 10 shall be fitted or designated not later than the first renewal survey as identified in regulation 5.1.2 of this Annex on or after 1 April 2023.

12 The requirements of paragraphs 10 and 11 above are not applicable to a fuel oil service system for a low-flashpoint fuel for combustion purposes for propulsion or operation on board the ship.

13 The competent authority of a Party shall, as appropriate, utilize the sampling point(s) which is(are) fitted or designated for the purpose of taking representative sample(s) of the fuel oil being used on board in order to verify that the fuel oil complies with this regulation. Taking fuel oil samples by the competent authority of the Party shall be performed as expeditiously as possible without causing the ship to be unduly delayed."

### **Regulation 18**

#### *Fuel oil availability and quality*

4 Paragraph 8.2 is replaced by the following:

"8.2 If a Party requires the representative sample to be analysed, it shall be done in accordance with the verification procedure set forth in appendix VI to this Annex to determine whether the fuel oil meets the requirements of this Annex."

### **Regulation 20**

#### *Attained Energy Efficiency Design Index (attained EEDI)*

5 A new paragraph 3 is added after existing paragraph 2, as follows:

"3 For each ship subject to regulation 21 of this Annex, the Administration or any organization duly authorized by it shall report to the Organization the required and attained EEDI values and relevant information, taking into account the guidelines developed by the Organization,<sup>4</sup> via electronic communication:

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<sup>2</sup> Refer to the *2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships* (MEPC.1/Circ.864/Rev.1).

<sup>3</sup> Refer to the *2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship* (MEPC.1/Circ.889).

<sup>4</sup> Refer to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.308(73)), as amended by the Organization.

- .1 within 7 months of completing the survey required under regulation 5.4 of this Annex; or
- .2 within 7 months following 1 April 2022 for a ship delivered prior to 1 April 2022."

**Regulation 21**  
*Required EEDI*

6 The existing table 1 (Reduction factors (in percentage) for the EEDI relative to the EEDI reference line) and the associated footnotes are replaced by the following:

"

Ship Type	Size	Phase 0	Phase 1	Phase 2	Phase 2	Phase 3	Phase 3
		1 Jan 2013 – 31 Dec 2014	1 Jan 2015 – 31 Dec 2019	1 Jan 2020 – 31 Mar 2022	1 Jan 2020 – 31 Dec 2024	1 Apr 2022 and onwards	1 Jan 2025 and onwards
Bulk carrier	20,000 DWT and above	0	10		20		30
	10,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*
Gas carrier	15,000 DWT and above	0	10	20		30	
	10,000 and above but less than 15,000 DWT	0	10		20		30
	2,000 and above but less than 10,000 DWT	n/a	0-10*		0-20*		0-30*
Tanker	20,000 DWT and above	0	10		20		30
	4,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*
Containership	200,000 DWT and above	0	10	20		50	
	120,000 and above but less than 200,000 DWT	0	10	20		45	
	80,000 and above but less than 120,000 DWT	0	10	20		40	
	40,000 and above but less than 80,000 DWT	0	10	20		35	
	15,000 and above but less than 40,000 DWT	0	10	20		30	

Ship Type	Size	Phase 0 1 Jan 2013 – 31 Dec 2014	Phase 1 1 Jan 2015 – 31 Dec 2019	Phase 2 1 Jan 2020 – 31 Mar 2022	Phase 2 1 Jan 2020 – 31 Dec 2024	Phase 3 1 Apr 2022 and onwards	Phase 3 1 Jan 2025 and onwards
	10,000 and above but less than 15,000 DWT	n/a	0-10*	0-20*		15-30*	
General Cargo ships	15,000 DWT and above	0	10	15		30	
	3,000 and above but less than 15,000 DWT	n/a	0-10*	0-15*		0-30*	
Refrigerated cargo carrier	5,000 DWT and above	0	10		15		30
	3,000 and above but less than 5,000 DWT	n/a	0-10*		0-15*		0-30*
Combination carrier	20,000 DWT and above	0	10		20		30
	4,000 and above but less than 20,000 DWT	n/a	0-10*		0-20*		0-30*
LNG carrier***	10,000 DWT and above	n/a	10**	20		30	
Ro-ro cargo ship (vehicle carrier)***	10,000 DWT and above	n/a	5**		15		30
Ro-ro cargo ship***	2,000 DWT and above	n/a	5**		20		30
	1,000 and above but less than 2,000 DWT	n/a	0-5*, **		0-20*		0-30*
Ro-ro passenger ship***	1,000 DWT and above	n/a	5**		20		30
	250 and above but less than 1,000 DWT	n/a	0-5*, **		0-20*		0-30*
Cruise passenger ship*** having non-conventional propulsion	85,000 GT and above	n/a	5**	20		30	
	25,000 and above but less than 85,000 GT	n/a	0-5*, **	0-20*		0-30*	

\* Reduction factor to be linearly interpolated between the two values dependent upon ship size. The lower value of the reduction factor is to be applied to the smaller ship size.

\*\* Phase 1 commences for those ships on 1 September 2015.

\*\*\* Reduction factor applies to those ships delivered on or after 1 September 2019, as defined in paragraph 43 of regulation 2.

**Note:** n/a means that no required EEDI applies."

7 In table 2 (Parameters for determination of reference values for the different ship types), the first row corresponding to Ship type defined in regulation 2.25 is replaced by the following:

"2.25 Bulk carrier	961.79	DWT of the ship where DWT ≤ 279,000 279,000 where DWT > 279,000	0.477"
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### Appendix I

#### Form of International Air Pollution Prevention (IAPP) Certificate (Regulation 8)

##### **Supplement to International Air Pollution Prevention Certificate (IAPP Certificate) Record of construction and equipment**

8 New paragraphs 2.3.4 and 2.3.5 are inserted after paragraph 2.3.3 as follows:

"2.3.4 The ship is fitted with designated sampling point(s) in accordance with regulation 14.10 or 14.11.....

2.3.5 In accordance with regulation 14.12, the requirement for fitting or designating sampling point(s) in accordance with regulation 14.10 or 14.11 is not applicable for a fuel oil service system for a low-flashpoint fuel for combustion purposes for propulsion or operation on board the ship  
.....

### Appendix VI

#### Fuel verification procedure for MARPOL Annex VI fuel oil samples (regulation 18.8.2)

9 The full text of appendix VI is replaced by the following:

##### **"Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8)**

The following relevant verification procedure shall be used to determine whether the fuel oil delivered to, in use or carried for use on board a ship has met the applicable sulphur limit of regulation 14 of this Annex.

This appendix refers to the following representative MARPOL Annex VI fuel oil samples:

Part 1 – sample of fuel oil delivered<sup>5</sup> in accordance with regulation 18.8.1, hereafter referred to as the "MARPOL delivered sample" as defined in regulation 2.54.

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<sup>5</sup> Samples taken in accordance with the 2009 Guidelines for the sampling of fuel oil for determination of compliance with the revised MARPOL Annex VI (resolution MEPC.182(59)).

Part 2 – sample of fuel oil in use,<sup>6</sup> intended to be used or carried for use on board in accordance with regulation 14.8, hereafter referred to as the "in-use sample" as defined in regulation 2.55 and "onboard sample"<sup>7</sup> as defined in regulation 2.56.

## **Part 1 – MARPOL delivered sample**

### *1 General Requirements*

1.1 The representative sample of the fuel oil, which is required by regulation 18.8.1 (the MARPOL delivered sample) shall be used to verify the sulphur content of the fuel oil delivered to a ship.

1.2 A Party, through its competent authority, shall manage the verification procedure.

1.3 A laboratory undertaking the sulphur testing procedure given in this appendix shall have valid accreditation<sup>8</sup> in respect of the test method to be used.

### *2 Verification Procedure Part 1*

2.1 The MARPOL delivered sample shall be conveyed by the competent authority to the laboratory.

2.2 The laboratory shall:

- .1 record the details of the seal number and the sample label on the test record;
- .2 record the condition of the seal of the sample as received on the test record; and
- .3 reject any sample where the seal has been broken prior to receipt and record that rejection on the test record.

2.3 If the seal of the sample as received has not been broken, the laboratory shall proceed with the verification procedure and shall:

- .1 unseal the sample;
- .2 ensure that the sample is thoroughly homogenized;
- .3 draw two subsamples from the sample; and
- .4 reseal the sample and record the new reseal details on the test record.

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<sup>6</sup> Samples taken in accordance with the *2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships* (MEPC.1/Circ.864/Rev.1).

<sup>7</sup> Refer to the *2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship* (MEPC.1/Circ.889).

<sup>8</sup> The laboratory is to be accredited to ISO/IEC 17025:2017 or an equivalent standard for the performance of the given sulphur content test ISO 8754:2003.

2.4 The two subsamples shall be tested in succession, in accordance with the specified test method referred to in regulation 2.52 of this Annex. For the purposes of this Part 1 verification procedure, the results of the test analysis shall be referred to as '1A' and '1B':

- .1 results '1A' and '1B' shall be recorded on the test record in accordance with the requirements of the test method; and
- .2 if the results of '1A' and '1B' are within the repeatability (r)<sup>9</sup> of the test method, the results shall be considered valid; or
- .3 if the results '1A' and '1B' are not within the repeatability (r) of the test method, both results shall be rejected and two new subsamples shall be taken by the laboratory and tested. The sample bottle shall be resealed in accordance with paragraph 2.3.4 after the new subsamples have been taken.
- .4 in the case of two failures to achieve repeatability between '1A' and '1B', the cause of that failure shall be investigated by the laboratory and resolved before further testing of the sample is undertaken. On resolution of that repeatability issue, two new subsamples shall be taken in accordance with paragraph 2.3. The sample shall be resealed in accordance with paragraph 2.3.4 after the new subsamples have been taken.

2.5 If the test results of '1A' and '1B' are valid, an average of these two results shall be calculated. The average value shall be referred to as 'X' and shall be recorded on the test record:

- .1 if the result 'X' is equal to or less than the applicable limit required by regulation 14, the fuel oil shall be considered to have met the requirement; or
- .2 if the result 'X' is greater than the applicable limit required by regulation 14, the fuel oil shall be considered to have not met the requirement.

**Table 1: Summary of Part 1 MARPOL delivered sample procedure**

On the basis of the test method referred to in regulation 2.52 of this Annex		
Applicable limit % m/m: V	Result 2.5.1: $X \leq V$	Result 2.5.2: $X > V$
0.10	Met the requirement	Not met the requirement
0.50		
Result 'X' reported to 2 decimal places		

2.6 The final results obtained from this verification procedure shall be evaluated by the competent authority.

<sup>9</sup> Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

2.7 The laboratory shall provide a copy of the test record to the competent authority managing the verification procedure.

## **Part 2 – In-use and onboard samples**

### **3 General Requirements**

3.1 The in-use or onboard sample, as appropriate, shall be used to verify the sulphur content of the fuel oil as represented by that sample of fuel oil at the point of sampling.

3.2 A Party, through its competent authority, shall manage the verification procedure.

3.3 A laboratory undertaking the sulphur testing procedure given in this appendix shall have valid accreditation<sup>10</sup> in respect of the test method to be used.

### **4 Verification Procedure Part 2**

4.1 The in-use or onboard sample shall be conveyed by the competent authority to the laboratory.

4.2 The laboratory shall:

- .1 record the details of the seal number and the sample label on the test record;
- .2 record the condition of the seal of the sample as received on the test record; and
- .3 reject any sample where the seal has been broken prior to receipt and record that rejection on the test record.

4.3 If the seal of the sample as received has not been broken, the laboratory shall proceed with the verification procedure and shall:

- .1 unseal the sample;
- .2 ensure that the sample is thoroughly homogenized;
- .3 draw two subsamples from the sample; and
- .4 reseal the sample and record the new reseal details on the test record.

4.4 The two subsamples shall be tested in succession, in accordance with the specified test method referred to in regulation 2.52 of this Annex. For the purposes of this Part 2 verification procedure, the results obtained shall be referred to as '2A' and '2B':

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<sup>10</sup> The laboratory is to be accredited to ISO/IEC 17025:2017 or an equivalent standard for the performance of the given sulphur content test ISO 8754:2003.

- .1 results '2A' and '2B' shall be recorded on the test record in accordance with requirements of the test method; and
  - .2 if the results of '2A' and '2B' are within the repeatability (r)<sup>11</sup> of the test method, the results shall be considered valid; or
  - .3 if the results of '2A' and '2B' are not within the repeatability (r) of the test method, both results shall be rejected and two new subsamples shall be taken by the laboratory and tested. The sample bottle shall be resealed in accordance with paragraph 4.3.4 after the new subsamples have been taken; and
  - .4 in the case of two failures to achieve repeatability between '2A' and '2B', the cause of that failure shall be investigated by the laboratory and resolved before further testing of the sample is undertaken. On resolution of that repeatability issue, two new subsamples shall be taken in accordance with paragraph 4.3. The sample shall be resealed in accordance with paragraph 4.3.4 after the new subsamples have been taken.
- 4.5 If the test results of '2A' and '2B' are valid, an average of these two results shall be calculated. That average value shall be referred to as 'Z' and shall be recorded on the test record:
- .1 if 'Z' is equal to or less than the applicable limit required by regulation 14, the sulphur content of the fuel oil as represented by the tested sample shall be considered to have met the requirement;
  - .2 if 'Z' is greater than the applicable limit required by regulation 14 but less than or equal to that applicable limit + 0.59R (where R is the reproducibility of the test method),<sup>12</sup> the sulphur content of the fuel oil as represented by the tested sample shall be considered to have met the requirement; or
  - .3 if 'Z' is greater than the applicable limit required by regulation 14 + 0.59R, the sulphur content of the fuel oil as represented by the tested sample shall be considered to have not met the requirement.

**Table 2: Summary of in-use or onboard sample procedure<sup>13</sup>**

On the basis of the test method referred to in regulation 2.52 of this Annex				
Applicable limit %m/m: V	Test margin value: W	Result 4.5.1: $Z \leq V$	Result 4.5.2: $V < Z \leq W$	Result 4.5.3: $Z > W$
0.10	0.11	Met the requirement	Met the requirement	Not met the requirement
0.50	0.53			
Result 'Z' reported to 2 decimal places				

<sup>11</sup> Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

<sup>12</sup> Reproducibility (R) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

<sup>13</sup> Results of testing undertaken by the Company or other entities are outside the MARPOL process and hence should be considered within the approach given by ISO 4259:2017-2 regarding recipient drawn samples.

4.6 The final results obtained from this verification procedure shall be evaluated by the competent authority.

4.7 The laboratory shall provide a copy of the test record to the competent authority managing the verification procedure."

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**ANNEX 2**

**RESOLUTION MEPC.325(75)  
(adopted on 20 November 2020)**

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

**Amendments to regulation E-1 and appendix I**

**(Commissioning testing of ballast water management systems and  
form of the International Ballast Water Management Certificate)**

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 article 19 of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (the BWM Convention), which specifies the amendment procedure and confers upon the Marine Environment Protection Committee of the Organization the function of considering amendments thereto for adoption by the Parties,

HAVING CONSIDERED, at its seventy-fifth session, proposed amendments to the BWM Convention regarding commissioning testing of ballast water management systems and the form of the International Ballast Water Management Certificate,

1 ADOPTS, in accordance with article 19(2)(c) of the BWM Convention, amendments to regulation E-1 and appendix I;

2 DETERMINES, in accordance with article 19(2)(e)(ii) of the BWM Convention, that the amendments shall be deemed to have been accepted on 1 December 2021 unless, prior to that date, more than one third of the Parties have notified the Secretary-General that they object to the amendments;

3 INVITES the Parties to note that, in accordance with article 19(2)(f)(ii) of the BWM Convention, the said amendments shall enter into force on 1 June 2022 upon their acceptance in accordance with paragraph 2 above;

4 INVITES ALSO the Parties to consider the application of the amendments to regulation E-1 with regard to commissioning testing as soon as possible to ships entitled to fly their flag, taking into account the *Guidance for the commissioning testing of ballast water management systems* (BWM.2/Circ.70/Rev.1), as may be amended;

5 RESOLVES that the analysis undertaken in the context of commissioning testing should be indicative;

6 REQUESTS the Secretary-General, for the purposes of article 19(2)(d) of the BWM Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Parties to the BWM Convention;

7 REQUESTS ALSO the Secretary-General to transmit copies of the present resolution and its annex to Members of the Organization which are not Parties to the BWM Convention;

8 REQUESTS FURTHER the Secretary-General to prepare a consolidated certified text of the BWM Convention.

ANNEX

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

**Regulation E-1**

*Surveys*

1 Paragraph 1.1 is replaced by the following:

"1 An initial survey before the ship is put in service or before the Certificate required under regulation E-2 or E-3 is issued for the first time. This survey shall verify that the ballast water management plan required by regulation B-1 and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the requirements of this Convention. This survey shall confirm that a commissioning test has been conducted to validate the installation of any ballast water management system by demonstrating that its mechanical, physical, chemical and biological processes are working properly, taking into account the guidelines developed by the Organization.\*"

2 Paragraph 1.5 is replaced by the following:

".5 An additional survey, either general or partial, according to the circumstances, shall be made after a change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material necessary to achieve full compliance with this Convention. The survey shall be such as to ensure that any such change, replacement or significant repair has been effectively made, so that the ship complies with the requirements of this Convention. When an additional survey is undertaken for the installation of any ballast water management system, this survey shall confirm that a commissioning test has been conducted to validate the installation of the system by demonstrating that its mechanical, physical, chemical and biological processes are working properly, taking into account the guidelines developed by the Organization.\*"

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\* Refer to the *2020 Guidance for the commissioning testing of ballast water management systems (BWM.2/Circ.70/Rev.1)*, as may be amended.

**Appendix I**

*Form of International Ballast Water Management Certificate*

3 The footnote of "IMO Number" under the item "Particulars of ship" is replaced by the following:

"IMO Ship Identification Number Scheme adopted by the Organization by resolution A.1117(30), as may be amended."

4 The text under the title "Details of ballast water management method(s) used" is replaced by the following:

"Method of ballast water management used .....  
Date installed (if applicable) (dd/mm/yyyy) .....  
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
- other approach in accordance with regulation ....."

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BWM.2/Circ.70/Rev.1  
9 December 2020

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

**2020 Guidance for the commissioning testing of ballast water management systems**

- 1 The Marine Environment Protection Committee (MEPC), at its seventy-third session (22 to 26 October 2018), approved the *Guidance for the commissioning testing of ballast water management systems*.
- 2 MEPC 74 (13 to 17 May 2019) invited submissions to the Sub-Committee on Pollution Prevention and Response (PPR) concerning proposals on any necessary changes to the Guidance in light of the draft amendments to regulation E-1 of the BWM Convention.
- 3 MEPC 75 (16 to 20 November 2020) approved the *2020 Guidance for the commissioning testing of ballast water management systems*, prepared by PPR 7 (17 to 21 February 2020), as set out in the annex.
- 4 Member Governments and international organizations are invited to bring the annexed Guidance to the attention of all parties concerned.
- 5 This circular revokes BWM.2/Circ.70.

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## ANNEX

### 2020 GUIDANCE FOR THE COMMISSIONING TESTING OF BALLAST WATER MANAGEMENT SYSTEMS

#### Context

1 The purpose of commissioning testing is to validate the installation of a ballast water management system (BWMS) by demonstrating that its mechanical, physical, chemical and biological processes are working properly. Commissioning testing is not intended to validate the design of type-approved BWMS that are approved by the Administration.

2 The following Guidance for the commissioning testing of BWMS has been developed for use by persons fitting and verifying the installation of BWMS in accordance with:

- .1 regulation E-1 of the Convention;
- .2 paragraph 8.2.5 of the BWMS Code, which requires that the Administration issuing the international ballast water management certificate verify that installation commissioning procedures are on board the ship in a suitable format;
- .3 paragraph 8.3.6 of the BWMS Code, which requires that the installation commissioning procedures have been completed prior to the issuance of the IBWMC following the installation of a BWMS; and
- .4 paragraph 1.18 of resolution MEPC.174(58), which provides that, when a type-approved ballast water management system is installed on board, an installation survey according to section 8 should be carried out.

#### Commissioning testing

3 Local ambient water should be used for testing regardless of the level of challenge it poses to the BWMS.

4 The following steps should be undertaken following installation of the BWMS on board the ship, and after all ballasting equipment (e.g. pumps and piping) has been fully installed and tested, as appropriate:

- .1 a sample may be collected during ballast water uptake to characterize the ambient water, by any means practical (e.g. in-line sample port or direct harbour sample). Characterization of the ambient water does not require detailed analysis of the uptake water, however an indicative analysis may be undertaken;
- .2 a representative sample should be collected during the corresponding ballast water discharge after the full treatment has been applied. Samples should be collected from the sampling point as described in the *Guidelines on ballast water sampling* (G2). The total sample volume should be at least 1 m<sup>3</sup>. If a smaller volume is validated to ensure representative sampling of organisms, it may be used;

- .3 the representative samples should be analysed for the two size classes of organisms, namely  $\geq 50 \mu\text{m}$  and  $\geq 10 \mu\text{m}$  to  $< 50 \mu\text{m}$ , as specified in the D-2 standard, using indicative analysis methods listed in BWM.2/Circ.42/Rev.2, as may be amended; and
- .4 the applicable self-monitoring parameters (e.g. flow rate, pressure, TRO concentration, UV transmittance/intensity, etc.) of the BWMS should also be assessed, taking into account the system design limitations of the BWMS, and the correct operation of all sensors and related equipment should be confirmed.

5 The commissioning test is successful if the indicative analysis indicates that the discharge samples do not exceed the D-2 standard for the size classes analysed (see paragraph 4.3) and the self-monitoring equipment indicates correct operation. Indicative analysis equipment used should be to the satisfaction of the Administration. Indicative analysis is defined in BWM.2/Circ.42/Rev.2, as may be amended.

6 In the case that the ambient water is not appropriate for the commissioning testing (e.g. salinity of ambient water is outside the system design limitations of the BWMS), testing should be evaluated to the satisfaction of the Administration.

7 The collection and analysis of the representative samples should be independent of the BWMS manufacturer or supplier and to the satisfaction of the Administration.

### **Documentation**

8 A written report, including methods, results (including raw data) and information on the self-monitoring parameters, should be provided to the Administration.

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MEPC.1/Circ.889  
7 December 2020

**2020 GUIDELINES FOR ON BOARD SAMPLING OF FUEL OIL INTENDED TO BE USED  
OR CARRIED FOR USE ON BOARD A SHIP**

1 The Marine Environment Protection Committee, at its seventy-fifth session (16 to 20 November 2020), approved the *2020 Guidelines for on board sampling of fuel oil intended to be used or carried for use on board a ship*.

2 Member Governments are invited to bring the annexed Guidelines to the attention of Administrations, industry, relevant shipping organizations, shipping companies and other stakeholders concerned.

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## ANNEX

### 2020 GUIDELINES FOR ON BOARD SAMPLING OF FUEL OIL INTENDED TO BE USED OR CARRIED FOR USE ON BOARD A SHIP

#### 1 Preface

1.1 The objective of these Guidelines is to establish an agreed method for the sampling, from tanks, of liquid fuel oil intended to be used or carried for use on board a ship and thereby promoting the effective control and enforcement of the relevant provisions of MARPOL Annex VI.

1.2 Fuel oil sampling should be performed in a manner that ensures the safety of personnel and of the ship. Fuel oil sampling in accordance with these Guidelines should be undertaken expeditiously and should not cause undue delay to the ship.

#### 2 Sampling procedures

##### 2.1 General

2.1.1 Tank sampling involves obtaining a sample of fuel oil from the tank in question. The sample obtained is representative of the fuel oil at the location from where it was drawn. Fuel oil in a tank may be sampled by use of the ship's fuel oil transfer system or, in some instances, directly from the tank. Alternative sampling approaches may be used provided they deliver a fuel oil sample which is representative of the fuel oil at the location from where the sample was drawn.

2.1.2 The exact arrangements in each case should be agreed in advance with the ship's representative.

2.1.3 In all instances, attention should be given to avoiding sample contamination by extraneous or sedimented matter.

##### 2.2 Sampling by use of the ship's fuel oil transfer system

2.2.1 When sampling by use of the ship's fuel oil transfer system it should preferably be set up to recirculate to the tank from which it is drawing. In instances where that is not possible, close attention should be given to not over-filling the receiving tank or mixing fuel oils from different consignments. It should be noted that for a viscous fuel oil to be in a pumpable condition it will typically need to be at a temperature corresponding to a viscosity of around 800 – 1,000 cSt.

2.2.2 Sampling should be undertaken downstream of the pump using a suitable sampling connection drawing from the flowing fuel oil. That sampling connection should fulfil all the following conditions:

- .1 it should be easily and safely accessible;
- .2 the sampling connection point should be in a position shielded from heated surfaces or electrical equipment, and any necessary shielding device or construction should be sturdy enough to ensure that any leaks, splashes or spray, under transfer pump discharge pressure, do not impinge onto such surfaces or equipment; and

- .3 the sampling connection should be provided with suitable spill collection arrangements or drainage to the drain tank or other safe location.

2.2.3 Having established that the fuel oil transfer system is handling the fuel oil to be sampled, the sampling connection should be thoroughly flushed through and thereafter the required sample should be obtained.

### **2.3 Direct sampling from a tank**

2.3.1 System tanks, such as settling or service tanks, should preferably be sampled using the *2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships*. To be noted that viscous fuel oils in such tanks will be at elevated temperatures and hence due caution would be necessary. Such tanks may be sampled directly only by means of tapping points mounted on the tank which should meet the requirements given above in 2.2.2.1 to 2.2.2.3. Sampling from a system tank should not be undertaken by means of removing an access plate or from the test drain connection.

2.3.2 Loaded cargo or other ship operational factors may preclude direct sampling from a tank.

2.3.3 Where direct tank sampling is to be undertaken, via – for example – a suitable access plate or tank hatch, it should be understood that the ship itself may not carry the necessary sampling equipment. In order to take a fuel oil sample direct from a tank, consideration should be given to the use of a specialist service provider having the appropriate sampling equipment, such as that given in ISO 3170:2004, and the expertise necessary to obtain the required sample in a safe and competent manner.

2.3.4 Since a sample obtained is representative of the fuel oil at the level or point from where it was drawn, it will therefore not always be necessary to take samples from more than one level or point in a tank.

2.3.5 Sampling may alternatively be undertaken from the sounding pipe of a tank by means of a suitable sampling arrangement.\* When sampling from a sounding pipe, the design of that sounding pipe and the recent filling history of that tank should be considered to assess the relationship of the fuel oil in the sounding pipe to that in the associated tank.

## **3 Sample handling**

3.1 The sample obtained should be collected into a suitable sample bottle. The sample bottle should be sealed by the inspector with a unique means of identification installed in the presence of the ship's representative. The ship should be given the option of retaining a duplicate sample. The label should include the following information:

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\* An example of a suitable arrangement for sampling from a tank's sounding pipe would be an external pumping device, either powered or manual, drawing fuel oil up through a hose lowered down the sounding pipe with a dedicated sampling head at the lower end. That sampling head should be of a diameter that allows free movement in the sounding pipe and of restricted length to avoid snagging in bends or change of section. Both ends of the sampling head should be conical to avoid snagging and scraping of the sounding pipe walls with a boring from the lower end to the hose connection – to avoid sample contamination the shape of the lower cone should be such that when pumping the sampling head will not tilt to draw directly from fuel oil adjacent to the pipe wall. The sampling head should be of sufficient weight for the hose to sink through the fuel oil to the required depth. In use the pumping rate should be sufficiently restricted that the flow into the sampling head is only from the bulk of the fuel oil being sampled – not also pulling-in pipe wall or sedimented matter.

- .1 sampling point location where the sample was drawn;
  - .2 bunker delivery note details of the fuel oil sampled, as per information required by appendix V of MARPOL Annex VI;
  - .3 date and port of sampling;
  - .4 name and IMO number of the ship;
  - .5 details of seal identification; and
  - .6 signatures and names of the inspector and the ship's representative.
-