

Subject

Introduction to the outcomes of MEPC 69

# **ClassNK**

## ***Technical Information***

No. TEC-1078  
Date 22 July 2016

To whom it may concern

A summary of the decision taken at the sixty-ninth session of the Marine Environment Protection Committee (MEPC 69) held from 18 to 22 April 2016 is provided as below for your information.

### 1. Ballast Water Management Convention

Ballast Water Management Convention was adopted in 2004 in order to prevent the adverse effects to the marine environment caused by the transfer of ballast water. The Convention will require ships to conduct ballast water exchange offshore or through Ballast Water Management Systems which meet the standard for the discharge of ballast water.

The Convention will enter into force 12 months after ratification by 30 states, representing 35% of the world merchant shipping tonnage.

#### (1) Status of ratification

Belgium, Fiji, Saint Lucia and Peru ratified the Convention in 2016. Currently, the Convention is ratified by 51 states, representing 34.87% of the world merchant shipping tonnage.

#### (2) Draft amendments to the Convention based on resolution A.1088(28)

At Assembly 28, held in 2013, resolution A.1088(28) was adopted, in which existing ships, originally required to install the Ballast Water Management Systems by the implementation date of the Convention, were allowed to be exempted from installation of the Systems for a period of maximum 5 years. Further, it was recommended to revise regulation B-3 upon entry into force of the Convention in line with the resolution.

At this session, draft amendments to regulation B-3 of the Convention reflecting the requirements of resolution A.1088(28) were approved. The draft amendments will be kept in abeyance for circulation immediately upon entry into force of the Convention with a view to subsequent adoption.

The implementation deadline for BWMS according to the amendments:

Ships keel laid before the entry into force : First renewal survey of IOPP Certificate  
after the entry into force  
Ships keel laid on or after the entry into force : First renewal survey of IOPP Certificate

(To be continued)

#### NOTES:

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(3) Additional revision of application schedule of regulation B-3

At this session, Liberia proposed to revise application schedule of regulation B-3, which allows additional extension from the installation of the Systems to existing ships, if ballast water exchange is appropriately conducted. The proposal was based on an assumption that dockyard capacity for retrofitting the system will fall short of the peak demand.

As a result of the discussion, it was agreed not to consider the proposal any further at this session, as opinions were divided. The Committee invited Liberia and other interested delegations to submit further information to a future session.

(4) Approval of Ballast Water Management Systems

Under the Convention, Ballast Water Management Systems should be type approved by the Administration based on the IMO guideline. In case where "active substances" are used to sterilize harmful aquatic organisms and pathogens, the basic approval of the active substances itself and the final approval of the systems by the IMO are needed prior to the type approval by the Administration.

At this session, three (3) final approvals were granted to Ballast Water Management Systems using active substances. The number of systems which can be actually installed on board, i.e. which are type-approved by the Administration, including the systems not using active substances, has reached sixty five (65) in total. The list of the approved systems is available at the following IMO website:

<http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/BWMTechnologies.aspx>

(5) Amendments to Guidelines for approval of Ballast Water Management Systems (G8)

Since MEPC 66 held in 2014, the amendments to the Guidelines for approval of Ballast Water Management Systems (G8) have been considered with a view to making them more robust due to a concern that Ballast Water Management Systems approved by IMO in line with G8 Guidelines cannot meet the standards depending on the environmental conditions.

As a result of the discussion, it was agreed to re-establish a correspondence group to continue the review of G8 Guidelines.

2. Green House Gases (GHG)

Kyoto Protocol, a protocol to United Nations Framework Convention on Climate Change (UNFCCC), aiming at the reduction of Greenhouse Gases (GHG) worldwide, excludes international shipping from its scope and stipulates that the IMO should consider the countermeasures against the GHG emissions from the international shipping.

At MEPC 62 held in July 2011, the amendments to MARPOL Annex VI were adopted to make the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP) for ships mandatory, which came into effect on 1 January 2013.

(To be continued)

(1) Review of technological developments for EEDI

Regulation 21.6 of MARPOL Annex VI requires, at the beginning of phase 1 and at the midpoint of phase 2, the review of the status of technological developments which may contribute to the improvement of the EEDI. If proven necessary, MEPC will amend the relevant requirements, i.e. "when to start the phase," "the EEDI reference line parameters" and "the reduction rate". At MEPC 67 held in 2014, it was agreed to establish a correspondence group coordinated by Japan and its interim report was submitted at this session.

In the interim report, it was recommended to retain the reduction rates based on the conclusion that the phase 2 criteria can be achieved. However, as a result of the deliberation, it was agreed to continue to conduct the review considering the lack of data used for this review. In this context, it was also agreed to continue to review work by correspondence group in order to analyze the EEDI database with a view to submission of the final report to MEPC 70.

(2) Guidelines for determining minimum propulsion power

Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions were developed in order to avoid construction of extremely under-powered ships along with implementation of EEDI requirements. The guidelines stipulated two assessment methods, e.g. level 1 and level 2. At MEPC 68 held in 2015, it was agreed to strengthen the requirements of level 1 assessment and the amendments to the guidelines were adopted. Further, it was agreed that the review of the level 2 assessment would be conducted after receiving the results of ongoing projects of SHOPERA and JASNAOE in the autumn of 2016.

At this session, the progress report of SHOPERA and JASNAOE projects for development of the minimum propulsion power Guidelines was submitted. A presentation on the progress of the project by SHOPERA and JASNAOE was made during this session.

(3) Amendments to EEDI Calculation Guidelines

At MEPC 67 held in 2014, the draft amendments to EEDI Calculation Guidelines in order to accommodate the attained EEDI calculation method for ships with dual fuel engines were adopted. However, the calculation method for ships equipped with dual fuel engines using gas fuel as non-primary fuel is not stipulated in the Guidelines while the method for ships which use gas fuel as primary fuel is given in the Guidelines.

At this session, China proposed to develop a calculation method for ships equipped with dual fuel engines using gas fuel as non-primary fuel. As a result of the deliberation, while development of such calculation method was supported, it was agreed to reconsider the proposal at MEPC 70 since the definition etc. in document submitted by China was regarded as unclear.

(To be continued)

## (4) Exemption from requirements in chapter 4 of MARPOL Annex VI

At MEPC 68 held in May 2015, Korea proposes that, for a ship that navigates in waters between domestic ports and engages in a single international voyage for a sale or repair, a justification should be provided to exempt such ship from having a SEEMP on board.

At this session, the Committee approved MEPC.1/Circ.863 on recommendation on exemption of ships not normally engaged on international voyages from the requirements in chapter 4 of PARPOL Annex VI (refer to attachment 6), and agree that exemption provisions should be added in chapter 4 of MARPOL Annex VI at future session.

## (5) Data collection system for fuel consumption of ships

At MEPC 65 held in May 2013, it was agreed to consider a data collection system for fuel consumption of ships including existing ships, as a technical and operational measures to further reduce GHG emissions from international shipping, and formal discussion has been started from MEPC 66 in April 2014.

At MEPC 68 held in May 2015 and the intersessional meeting held in September 2015, it was agreed to use total annual fuel consumption, distance travelled, service hours and design DWT as a proxy of cargo weight/volume for data collection system.

At this session, the draft amendments to MARPOL Annex VI to implement the mandatory data collection system were developed. As a result of the deliberation, the Committee approved the draft amendments to MARPOL Annex VI with a view to adoption at MEPC 70. Further, it was agreed to establish a correspondence group coordinated by Japan in order to promote the development of the relevant guidelines, etc.

## Overview of draft regulation on data collection system

Application	:	Ships of 5,000GT and above
Information to be collected	:	Identification and particular of ship, fuel consumption, distance travelled, hours not at berth etc.
Reporting period	:	1 January until 31 December each year

## (6) GHG emission reduction target for international shipping

From MEPC 68 held in 2015, it was considered to establish a GHG emission reduction target for international shipping, or develop a work plan to establish the target.

As a result of the deliberation, it was agreed to introduce the data collection system in MARPOL Annex VI as a matter of priority, and continue to consider this matter at next session, with a view to an in-depth discussion on how to progress the matter.

(To be continued)

### 3. Air pollution prevention

#### (1) Sulphur content of fuel oils

MARPOL Annex VI regulation 14.8 requires reviewing the availability of low-sulphur fuel oils prior to implementation of the global 0.5% sulphur limit. The review shall be completed by 2018 to decide whether the global 0.5% sulphur limit is to be implemented from 2020 or 2025.

At this session, a progress report of the review of fuel oil availability made by the Steering Committee was considered. As a result of the discussion, it was agreed in principle to continue the review by the Steering Committee and that final decision on the date of implementation of the global 0.5% sulphur limit should be made at MEPC 70, where the final report of Steering Committee will be submitted.

#### (2) Fuel oil quality

Regulation 18 of MARPOL Annex VI stipulates the fuel oil quality for ships, including the prohibition of harmful additive substances. At MEPC 67, it was agreed to establish a correspondence group to develop draft guidance for assuring the quality of fuel oil delivered for use on board ships and to consider the adequacy of the current legal framework in MARPOL Annex VI.

At this session, the Committee considered three aspects of possible draft guidance on best practice for fuel oil providers, fuel oil purchaser/user and Member State/coastal State which were developed by the group. As a result of the discussion, it was agreed to continue consideration on the draft guidance by the correspondence group. On the other hand, as for the adequacy of the current legal framework in MARPOL Annex VI, it was agreed that the existing legal framework is adequate and further consideration on this matter is not necessary.

### 4. Discharge of cargo hold wash water

Taking into account the shortage of adequate port reception facilities, MEPC.1/Circ.810 has been issued in 2013, which allows discharge of cargo hold wash water containing harmful to the marine environment (HME) in case there is no information on adequate reception facilities at receiving terminal or at the next port to call, subject to the certain conditions such as minimizing solid residue discharge etc. At this session, future arrangements of cargo hold wash water were considered since the MEPC.1/Circ.810 were expired at the end of 2015.

As a result of the deliberation, it was agreed not to extend application of MEPC.1/Circ.810 since an increased number of port reception facilities for HME residues is in place in ports/terminals and the extension of the application of MEPC.1/Circ.810 would not encourage ports/terminals to provide the needed reception facilities but might even prove to be a disincentive. Further, it was also agreed to invite Member Governments to report IMO any alleged inadequacies for port reception facilities, in accordance with the procedures set out in MEPC.1/Circ.834.

(To be continued)

5. Amendments to mandatory instruments

MEPC 69 adopted amendments to mandatory instruments as follows:

(1) Amendments to MARPOL Annex II

In line with the revised GESAMP Hazard Evaluation Procedure, amendments to MARPOL Annex II Appendix I "guidelines for the categorization of noxious liquid substances" were adopted.

Entry into force: 1 September 2017 (refer to MEPC.270(69) as attachment 1)

(2) Amendments to MARPOL Annex VI

Amendments to MARPOL Annex VI related to record requirements for operational compliance with NO<sub>x</sub> Tier III emission control areas (ECA) were adopted. The amendments require ships installed marine diesel engines to which NO<sub>x</sub> Tier III emission limit applies which are certified to Tier II and Tier III or which are certified to Tier II only. It is required to record the tier and on/off status of engines together with the date, time and position of the ship in logbook at entry into/exit from an ECA, and when the on/off status changes within an ECA.

Entry into force: 1 September 2017 (refer to MEPC.271(69) as attachment 2)

(3) Amendments to NO<sub>x</sub> Technical Code

Amendments to MARPOL Annex VI to apply NO<sub>x</sub> standards to gas-fuelled engines had been adopted at MEPC 67. In this connection, the draft amendments to the NO<sub>x</sub> Technical Code related to the requirements of the testing of gas-fuelled engines and dual fuel engines which are tested with gas fuel were adopted.

Entry into force: 1 September 2017 (refer to MEPC.272(69) as attachment 3)

(4) Amendments to MARPOL Annex IV

Amendments to MARPOL Annex IV to prohibit the discharge of sewage from passenger ships operating in Baltic Sea were adopted. For new passenger ships on or after 1 June 2019, and for existing passenger ships on or after 1 June 2021, discharge of sewage within Baltic Sea will be prohibited. For existing passenger ships en route directly to or from a port located outside the special area and to or from a port located east of longitude 28° 10' E within the special area that do not make any other port calls within the special area, it was agreed not to apply the requirements until 31 May 2023.

Entry into force: 1 September 2017 (refer to MEPC.274(69)/ 275(69) as attachment 4/5)

(To be continued)

A summary of the outcomes of MEPC 69 is also available on the IMO web-site.  
<http://www.imo.org/MediaCentre/MeetingSummaries/MEPC/Pages/Default.aspx>

For any questions about the above, please contact:

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Attachment:

1. Resolution MEPC.270(69)
2. Resolution MEPC.271(69)
3. Resolution MEPC.272(69)
4. Resolution MEPC.274(69)
5. Resolution MEPC.275(69)
6. MEPC.1/Circ.863

**ANNEX 1**

**RESOLUTION MEPC.270(69)  
(Adopted on 22 April 2016)**

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

**Amendments to MARPOL Annex II**

**(Revised GESAMP Hazard Evaluation Procedure)**

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,

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

HAVING CONSIDERED, at its sixty-ninth session, proposed amendments to Appendix I of MARPOL Annex II concerning the abbreviated legend to the revised GESAMP Hazard Evaluation Procedure,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to Appendix I of MARPOL Annex II, 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 March 2017 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 September 2017 upon their acceptance in accordance with paragraph 2 above;

4 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;

5 REQUESTS FURTHER 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 II  
(Revised GESAMP Hazard Evaluation Procedure)**

ANNEX II

**REGULATIONS FOR THE CONTROL OF POLLUTION BY  
NOXIOUS LIQUID SUBSTANCES IN BULK**

Appendix I

**Guidelines for the categorization of noxious liquid substances**

The tables under the title "Abbreviated legend to the revised GESAMP Hazard Evaluation Procedure" are replaced with the following:

**The Revised GESAMP hazard evaluation procedure**

Columns A & B Aquatic environment					
rating	A Bioaccumulation and biodegradation		B Aquatic toxicity		
	A 1 Bioaccumulation		A 2 Biodegradation	B 1 Acute toxicity LC/EC/IC50 (mg/l)	B 2 Chronic toxicity NOEC (mg/l)
	log Pow	BCF			
0	<1 or > ca.7	no measurable BCF	<b>R:</b> readily biodegradable	>1000	>1
1	≥1 - <2	≥1 - <10	<b>NR:</b> not readily biodegradable	>100 - ≤1000	>0.1 - ≤1
2	≥2 - <3	≥10 - <100		>10 - ≤100	>0.01 - ≤0.1
3	≥3 - <4	≥100 - <500		>1 - ≤10	>0.001 - ≤0.01
4	≥4 - <5	≥500 - <4000		>0.1 - ≤1	≤0.001
5	≥5 - < ca.7	>4000		>0.01 - ≤0.1	
6				≤0.01	

Columns C & D Human health (toxic effects to mammals)						
rating	C Acute mammalian toxicity			D Irritation, corrosion and long-term health effects		
	C1 Oral toxicity LD <sub>50</sub> /ATE (mg/kg)	C2 Dermal toxicity LD <sub>50</sub> /ATE (mg/kg)	C3 Inhalation toxicity LC <sub>50</sub> /ATE (mg/l)	D1 Skin irritation & corrosion	D2 Eye irritation & corrosion	D3 Long-term health effects
0	>2000	>2000	>20	not irritating	not irritating	<b>C</b> - Carcinogenic
1	>300 - ≤2000	>1000 - ≤2000	>10 - ≤20	mildly irritating	mildly irritating	<b>M</b> - Mutagenic
2	>50 - ≤300	>200 - ≤1000	>2 - ≤10	irritating	irritating	<b>R</b> - Reprotoxic
3	>5 - ≤50	>50 - ≤200	>0.5 - ≤2	severely irritating or corrosive  <b>3A</b> Corr. (≤4hr) <b>3B</b> Corr. (≤1hr) <b>3C</b> Corr. (≤3min)	severely irritating	<b>Ss</b> - Sensitising to skin <b>Sr</b> - Sensitising to respiratory system <b>A</b> - Aspiration hazard <b>T</b> - Target Organ Toxicity <b>N</b> - Neurotoxic <b>I</b> - Immunotoxic
4	≤5	≤50	≤0.5			

Column E Interference with other uses of the sea			
E1 Tainting	E2 Physical effects on wildlife & benthic habitats	Numerical rating	E3 Interference with Coastal Amenities
<b>NT</b> : not tainting (tested) <b>T</b> : tainting test positive	<b>Fp</b> : Persistent Floater <b>F</b> : Floater  <b>S</b> : Sinking Substances	0	no interference <b>no warning</b>
		1	slightly objectionable <b>warning, no closure of amenity</b>
		2	moderately objectionable <b>possible closure of amenity</b>
		3	highly objectionable <b>closure of amenity</b>

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**ANNEX 2**

**RESOLUTION MEPC.271(69)  
(Adopted on 22 April 2016)**

**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 regulation 13 of MARPOL Annex VI**

**(Record requirements for operational compliance with NO<sub>x</sub> Tier III  
emission control areas)**

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,

NOTING 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 and adopting amendments thereto,

HAVING CONSIDERED, at its sixty-ninth session, draft amendments to MARPOL Annex VI, related to record requirements for operational compliance with NO<sub>x</sub> Tier III emission control areas,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to regulation 13 of 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 March 2017, 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 September 2017 upon their acceptance in accordance with paragraph 2 above;

4 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;

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

ANNEX

**AMENDMENTS TO MARPOL ANNEX VI  
(Record requirements for operational compliance with  
NO<sub>x</sub> Tier III emission control areas)**

**ANNEX VI**

**REGULATION FOR THE PREVENTION OF AIR POLLUTION FROM SHIP**

**Chapter 3  
Requirements for control of emissions from ships**

**Regulation 13 – Nitrogen oxides (NO<sub>x</sub>)**

- 1 A new paragraph 5.3 is added after existing paragraph 5.2, as follows:

"5.3 The tier and on/off status of marine diesel engines installed on board a ship to which paragraph 5.1 of this regulation applies which are certified to both Tier II and Tier III or which are certified to Tier II only shall be recorded in such logbook as prescribed by the Administration at entry into and exit from an emission control area designated under paragraph 6 of this regulation, or when the on/off status changes within such an area, together with the date, time and position of the ship."

- 2 In paragraph 5.1.1, the symbol "NO<sub>x</sub>" is replaced with the symbol "NO<sub>2</sub>".

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**ANNEX 3**

**RESOLUTION MEPC.272(69)  
(Adopted on 22 April 2016)**

**AMENDMENTS TO THE NO<sub>x</sub> TECHNICAL CODE 2008  
NITROGEN OXIDES FROM MARINE DIESEL ENGINES**

**(Testing of gas-fuelled and dual fuel engines)**

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,

NOTING 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 and adopting amendments thereto,

NOTING FURTHER regulation 13 of MARPOL Annex VI which makes the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO<sub>x</sub> Technical Code 2008) mandatory under that Annex,

HAVING CONSIDERED, at its sixty-ninth session, draft amendments to the NO<sub>x</sub> Technical Code 2008 related to the testing of gas-fuelled and dual fuel engines,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to the NO<sub>x</sub> Technical Code 2008, as 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 March 2017, 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 September 2017 upon their acceptance in accordance with paragraph 2 above;

4 AGREES that these amendments apply to each marine diesel engine with a power output of more than 130 kW installed, or designed and intended for installation, on a ship subject to regulation 13 of MARPOL Annex VI, on or after 1 September 2017;

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

ANNEX

**AMENDMENTS TO THE NO<sub>x</sub> TECHNICAL CODE 2008  
(Testing of gas-fuelled and dual fuel engines)**

**Abbreviations, subscripts and symbols**

1 In subparagraphs .1 and .2 and in the title of table 2, the word "marine" is added before the word "diesel".

2 In table 2, row 4 is replaced with the following:

"

(H)FID	(Heated) flame ionization detector
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"

**Chapter 1 – General**

3 In paragraph 1.3.10, the following new sentence is inserted after the first sentence:

"In addition, a gas-fuelled engine installed on a ship constructed on or after 1 March 2016 or a gas-fuelled additional or non-identical replacement engine installed on or after that date is also considered as a marine diesel engine."

**Chapter 4 – Approval for serially manufactured engines: engine family and engine group concepts**

4 In paragraph 4.3.8.2.6, after the existing bullet point "– dual fuel", a new bullet point is added as follows:

"– gas fuel"

5 After existing paragraph 4.3.8.2.10, a new paragraph 4.3.8.2.11 is added as follows:

".11 ignition methods:

- compression ignition
- ignition by pilot injection
- ignition by spark plug or other external ignition device"

6 In paragraph 4.4.6.2.5, after the words "injection cam", the words "or gas valve" are inserted.

7 In the first and second bullet points under paragraph 4.4.7.2.1, after the word "injection", the words "or ignition" are inserted, respectively.

8 In paragraph 4.4.7.2.2, after the existing bullet point "– combustion chamber", a new bullet point is added as follows:

"– gas valve specification."

**Chapter 5 – Procedures for NO<sub>x</sub> emission measurements on a test bed**

9 In paragraph 5.2.1.2, after the word "engines", the words "operating on liquid or dual fuel" are inserted.

10 The existing paragraph 5.2.1.3 is renumbered as 5.2.1.3.1 and in the renumbered paragraph 5.2.1.3.1, after the word "engines", the words "operating on liquid or dual fuel" are inserted.

11 A new paragraph 5.2.1.3.2 is added after the renumbered paragraph 5.2.1.3.1 as follows:

"5.2.1.3.2 For engines to be tested with gas fuel only with or without cooling of the intake air the parameter  $f_a$  shall be determined according to the following:

$$f_a = \left(\frac{99}{p_s}\right)^{1.2} \cdot \left(\frac{T_a}{298}\right)^{0.6} \quad (2a) "$$

12 In the second sentence of paragraph 5.3.3, the words "fuel injection pump" are replaced with the word "engine".

13 In the first sentence of paragraph 5.3.4, the words "for dual fuel" are deleted.

14 In the second sentence of paragraph 5.4.2, before the word "diesel", the word "marine" is inserted.

15 A new paragraph 5.12.3.2.3 is added as follows:

".3 The calculation shall be in accordance with paragraphs 5.12.3.1 to 5.12.3.2. However,  $q_{mf}$ ,  $W_{ALF}$ ,  $W_{BET}$ ,  $W_{DEL}$ ,  $W_{EPS}$  values shall be calculated in accordance with the following table:

<b>Factors in the formula (6) (7) (8)</b>		<b>Formula for factors</b>
$q_{mf}$	=	$q_{mf\_G} + q_{mf\_L}$
$W_{ALF}$	=	$\frac{q_{mf\_G} \times W_{ALF\_G} + q_{mf\_L} \times W_{ALF\_L}}{q_{mf\_G} + q_{mf\_L}}$
$W_{BET}$	=	$\frac{q_{mf\_G} \times W_{BET\_G} + q_{mf\_L} \times W_{BET\_L}}{q_{mf\_G} + q_{mf\_L}}$
$W_{DEL}$	=	$\frac{q_{mf\_G} \times W_{DEL\_G} + q_{mf\_L} \times W_{DEL\_L}}{q_{mf\_G} + q_{mf\_L}}$
$W_{EPS}$	=	$\frac{q_{mf\_G} \times W_{EPS\_G} + q_{mf\_L} \times W_{EPS\_L}}{q_{mf\_G} + q_{mf\_L}}$

"

16 Paragraph 5.12.3.3 is replaced with the following:

"5.12.3.3 For the intake air:

$$k_{wa} = 1 - k_{w2} \quad (15)"$$

17 Paragraph 5.12.4.1 is replaced with the following:

"5.12.4.1 As the NO<sub>x</sub> emission depends on ambient air conditions, the NO<sub>x</sub> concentration shall be corrected for ambient air temperature and humidity with the factors in accordance with 5.12.4.5, 5.12.4.6 or 5.12.4.7 as applicable."

18 In paragraph 5.12.4.6, the last sentence is replaced with the following:

"However if  $H_a \geq H_{SC}$ , then  $H_{SC}$  shall be used in place of  $H_a$  in formula (17) or (17a)."

19 A new paragraph 5.12.4.7 is added after existing paragraph 5.12.4.6 as follows:

"5.12.4.7 For engines to be tested with gas fuel only:

$$k_{hd} = 0.6272 + 44.030 \times 10^{-3} \times H_a - 0.862 \times 10^{-3} \times H_a^2 \quad (17a)$$

where:

$H_a$  is the humidity of the intake air at the inlet to the air filter in g water per kg dry air."

## **Chapter 6 – Procedures for demonstrating compliance with NO<sub>x</sub> emission limits on board**

20 In the first sentence of paragraph 6.2.1.2, before the word "diesel", the word "marine" is inserted.

21 Subparagraph 6.2.2.3.1 is replaced with the following:

".1 injection or ignition timing,"

22 In subparagraph 6.2.2.3.14, the word "or" is deleted.

23 At the end of subparagraph 6.2.2.3.15, the word "or" is added.

24 A new subparagraph 6.2.2.3.16 is added as follows:

".16 gas valve."

25 In the third sentence of paragraph 6.3.1.4, the word "dual" is replaced with the word "gas".

26 The footnote of table 6 is replaced with the following:

"\* Only for engines to be tested with gas fuel."



27 Paragraph 6.3.4.1 is replaced with the following:

"6.3.4.1 Generally all emission measurements with liquid fuel shall be carried out with the engine running on marine diesel fuel oil of an ISO 8217:2005, DM grade. Generally all emission measurements with gas fuel shall be carried out with the engine running on gas fuel equivalent to ISO 8178-5:2008."

28 In paragraph 6.3.4.3, before the word "engine", the words "or gas-fuelled" are inserted.

**Appendix III – Specifications for analysers to be used in the determination of gaseous components of marine diesel engine emissions**

29 Subparagraph 1.2.12 is replaced with the following:

".12 O<sub>2</sub> – Oxygen analyser

Paramagnetic detector (PMD), zirconium dioxide (ZRDO) or electrochemical sensor (ECS). ZRDO shall not be used for dual fuel or gas-fuelled engines."

30 At the end of paragraph 3.3, a new sentence is added as follows:

"Optionally, for gas-fuelled engines (without liquid pilot injection), the hydrocarbon analyser may be of the non-heated flame ionization detector (FID) type."

31 At the end of paragraph 3.5, a new sentence is added as follows:

"ZRDO shall not be used for dual fuel or gas-fuelled engines."

**Appendix IV – Calibration of the analytical and measurement instruments**

32 In paragraph 2.2.4, the word "bleeding" is replaced with the word "blending".

33 In paragraphs 5.3, 5.4.2, 8, 8.1.1, 8.2.2 and 8.3.2.10, the symbol "FID" is replaced with the symbol "(H)FID", respectively.

**Appendix V – Parent engine test report and test data**

**Section 1 – Parent engine test report**

34 Rows 10, 11 and 12 of sheet 1/5 are replaced with the following:

"

Static injection or ignition timing	deg CA BTDC	
Electronic injection or ignition control	No:	Yes:
Variable injection or ignition control	No:	Yes:

"

35 Rows 6 and 27 of sheet 2/5 are replaced, respectively, as follows:

Row 6:

"

Fuel type to be used on board	Distillate/distillate or heavy fuel/dual fuel/ gas fuel
-------------------------------	--

"

Row 27:

"

Injection or ignition timing (range)					
--------------------------------------	--	--	--	--	--

"

36 A new row is inserted after row 6 of sheet 2/5 as follows:

"

Ignition methods	Compression ignition/ignition by pilot injection/ignition by spark plug or other external ignition device
------------------	---

"

37 The title of the table "Fuel characteristics" under sheet 3/5 is replaced with the following:

"Liquid fuel characteristics"

38 A new table is added after the table of fuel characteristics under sheet 3/5 as follows:

**"Gas fuel characteristics"**

Fuel type:				
Fuel properties			Fuel elemental analysis	
Methane number	EN16726: 2015		Carbon	% m/m
Lower heating value		MJ/kg	Hydrogen	% m/m
Boiling point		°C	Nitrogen	% m/m
Density at boiling point		kg/m <sup>3</sup>	Oxygen	% m/m
Pressure at boiling point		bar (abs)	Sulphur	% m/m
			Methane, CH <sub>4</sub>	mol%
			Ethane, C <sub>2</sub> H <sub>6</sub>	mol%
			Propane, C <sub>3</sub> H <sub>8</sub>	mol%
			Isobutane, i C <sub>4</sub> H <sub>10</sub>	mol%
			N-Butane, n C <sub>4</sub> H <sub>10</sub>	mol%
			Pentane, C <sub>5</sub> H <sub>12</sub>	mol%
			C6+	mol%
			CO <sub>2</sub>	mol%

39 Row 11 of sheet 5/5 is replaced and a footnote is added as follows:

"

Fuel rack/gas admission duration**	mm/sec													
------------------------------------	--------	--	--	--	--	--	--	--	--	--	--	--	--	--

\*\* Only for engines to be tested with gas fuel"

**Section 2 – Parent engine test data to be included in the technical file**

40 In the second table, currently entitled "Parent engine test fuel oil", the title is replaced by:

"Parent engine test liquid fuel"

The following table is inserted after the aforementioned table:

"

<b>Parent engine test gas fuel</b>		
ISO 8178-5:2008		
Carbon	% m/m	
Hydrogen	% m/m	
Sulphur	% m/m	
Nitrogen	% m/m	
Oxygen	% m/m	
Methane, CH <sub>4</sub>	mol%	
Ethane, C <sub>2</sub> H <sub>6</sub>	mol%	
Propane, C <sub>3</sub> H <sub>8</sub>	mol%	
Isobutane, i C <sub>4</sub> H <sub>10</sub>	mol%	
N-Butane, n C <sub>4</sub> H <sub>10</sub>	mol%	
Pentane, C <sub>5</sub> H <sub>12</sub>	mol%	
C6+	mol%	
CO <sub>2</sub>	mol%	

"

**Appendix VI – Calculation of exhaust gas mass flow (carbon balance method)**

41 In paragraph 2.5, the words "in case of gas mode operation of dual-fuel engine," are deleted.

**Appendix VII – Checklist for an engine parameter check method**

42 The chapeau of paragraph 1.1 is replaced with the following:

".1 parameter 'injection timing and ignition timing': "

43 At the end of subparagraph 1.1.4, the word "and" is added.

44 A new subparagraph 1.1.5 is added as follows:

".5 timing indicator or timing light."

#### **Appendix VIII – Implementation of the direct measurement and monitoring method**

45 At the end of paragraph 2.1.1.4, a new sentence is added as follows:

"Optionally, for gas-fuelled engines (without liquid pilot injection), the hydrocarbon analyser may be of the non-heated flame ionization detector (FID) type."

46 At the end of paragraph 2.1.1.5, a new sentence is added as follows:

"ZRDO shall not be used for dual fuel or gas-fuelled engines."

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**ANNEX 9**

**RESOLUTION MEPC.274(69)  
(Adopted on 22 April 2016)**

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

**Amendments to MARPOL Annex IV**

**(Baltic Sea Special Area and Form of ISPP Certificate)<sup>2</sup>**

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,

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

HAVING CONSIDERED, at its sixty-ninth session, proposed amendments to regulations 1 and 11 and to the appendix to MARPOL Annex IV,

1 ADOPTS, in accordance with article 16(2)(d) of MARPOL, amendments to regulations 1 and 11 of MARPOL Annex IV concerning the Baltic Sea Special Area and to the appendix to MARPOL Annex IV concerning the Form of the International Sewage Pollution Prevention Certificate, the texts of which are 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 March 2017, 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 September 2017 upon their acceptance in accordance with paragraph 2 above;

4 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;

5 REQUESTS FURTHER 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 IV

#### REGULATIONS FOR THE PREVENTION OF POLLUTION BY SEWAGE FROM SHIPS

##### Chapter 1 General

###### Regulation 1 *Definitions*

1 Paragraph 10 is replaced by the following:

"10 A *passenger ship* means a ship which carries more than twelve passengers.

For the application of regulation 11.3 a *new passenger ship* is a passenger ship:

- .1 for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is in similar stage of construction, on or after 1 June 2019; or
- .2 the delivery of which is on or after 1 June 2021.

An *existing passenger ship* is a passenger ship which is not a new passenger ship."

##### Chapter 3 Equipment and control of discharge

###### Regulation 11 *Discharge of sewage*

2 Paragraph 3 is replaced by the following:

"B *Discharge of sewage from passenger ships within a special area*

3 Subject to the provisions of regulation 3 of this Annex, the discharge of sewage from a passenger ship within a special area\* shall be prohibited:

- .1 for new passenger ships, on a date determined by the Organization pursuant to regulation 13.2 of this Annex, but in no event prior to 1 June 2019; and
- .2 for existing passenger ships, on a date determined by the Organization pursuant to regulation 13.2 of this Annex, but in no event prior to 1 June 2021, except when the following conditions are satisfied: the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in regulation 9.2.1 of this Annex, and the effluent shall not produce visible floating solids nor cause discoloration of the surrounding water."

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\* Refer to the *Establishment of the date on which regulation 11.3 of MARPOL Annex IV in respect of the Baltic Sea Special Area shall take effect*, adopted by resolution MEPC 275(69).

## Appendix

### Form of International Sewage Pollution Prevention Certificate

#### International Sewage Pollution Prevention Certificate

3 The final paragraph under section 1.1 is replaced by the following:

"The sewage treatment plant is certified by the Administration to meet the effluent standards as provided for in the *Guidelines on implementation of effluent standards and performance test for sewage treatment plants*, adopted by resolution MEPC.227(64), as amended, including/excluding\* the standards of section 4.2 thereof."

With the following footnote:

" \* Delete as appropriate "

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**ANNEX 10**

**RESOLUTION MEPC.275(69)  
(Adopted on 22 April 2016)**

**ESTABLISHMENT OF THE DATE ON WHICH REGULATION 11.3 OF MARPOL ANNEX IV  
IN RESPECT OF THE BALTIC SEA SPECIAL AREA SHALL TAKE EFFECT**

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 (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

NOTING that regulation 1.6.1 of Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), defines the Baltic Sea as a Special Area under the said Annex,

NOTING ALSO the definition of Special Area under MARPOL Annex IV, i.e. a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by sewage is required,

NOTING FURTHER the information provided to the Committee, at its sixty-eighth session, by Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden, and, at its sixty-ninth session, by the Russian Federation, representing the MARPOL Parties bordering the Baltic Sea Special Area, regarding reception facilities provided within the said Special Area, in accordance with regulation 13 of MARPOL Annex IV,

HAVING CONSIDERED the date on which the discharge requirements of regulation 11.3 of MARPOL Annex IV in respect of the Baltic Sea Special Area shall take effect,

1 DECIDES that, in accordance with the requirements set out in regulation 13.2 of MARPOL Annex IV, the discharge requirements for Special Areas in regulation 11.3 of MARPOL Annex IV for the Baltic Sea Special Area shall take effect on:

- .1 1 June 2019 for new passenger ships;
- .2 1 June 2021 for existing passenger ships other than those specified in paragraph 1.3 below; and
- .3 1 June 2023 for existing passenger ships en route directly to or from a port located outside the special area and to or from a port located east of longitude 28°10' E within the special area that do not make any other port calls within the special area;

2 ENCOURAGES Member Governments, industry groups and other stakeholders concerned to comply immediately on a voluntary basis with the Special Area requirements for the Baltic Sea Special Area;



3 REQUESTS the Secretary-General to notify, in conformity with regulation 13 of MARPOL Annex IV, all Parties to MARPOL of the aforementioned decision by 30 September 2016;

4 FURTHER REQUESTS the Secretary-General to notify all Members of the Organization of the aforementioned decision.

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MEPC.1/Circ.863  
17 June 2016

**RECOMMENDATION ON EXEMPTION OF SHIPS NOT NORMALLY ENGAGED  
ON INTERNATIONAL VOYAGES FROM THE REQUIREMENTS  
IN CHAPTER 4 OF MARPOL ANNEX VI**

1 The Marine Environment Protection Committee, at its sixty-ninth session (18 to 22 April 2016), noting that chapter 4 of MARPOL Annex VI applies to ships engaged on international voyages and therefore recognizing the need for uniform application of exemptions from the requirements in chapter 4 of MARPOL Annex VI, including the requirement for a Ship Energy Efficiency Management Plan (SEEMP) on board a ship in the case a ship not normally engaged on international voyages undertakes a single international voyage, approved the *Recommendation on exemption of ships not normally engaged on international voyages from the requirements in chapter 4 of MARPOL Annex VI*, as follows:

A ship which is not normally engaged on international voyages but which, in exceptional circumstances, is required to undertake a single international voyage, may be exempted by the Administration from any of the requirements in chapter 4 of MARPOL Annex VI.

2 Member Governments are invited to use the Recommendation when exempting ships from the requirements in chapter 4 of MARPOL Annex VI and bring it to the attention of Administrations, industry, relevant shipping organizations, shipping companies and other stakeholders concerned, as appropriate.