

標題

MEPC 69 の審議結果の紹介

ClassNK

テクニカル インフォメーション

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各位

2016年4月18日から22日にかけて開催されたIMOの第69回海洋環境保護委員会(MEPC 69)での情報及び審議結果について、次の通りお知らせいたします。

1. バラスト水管理条約関連

船舶のバラスト水の移送による海洋生態系への悪影響を防止するため、バラスト水管理条約が2004年に採択されています。同条約では、船舶に対して沖合におけるバラスト水交換を実施するか、バラスト水排出基準を満足するバラスト水処理装置を使用したバラスト水交換が要求されています。

同条約は、30ヶ国以上の批准かつ批准国の合計商船船腹量が世界の商船船腹量の35%以上となった12ヵ月後に発効することとなっています。

(1) 条約の批准状況

2016年に入りベルギー、フィジー、セントルシア及びペルーが批准し、批准国数は51ヶ国、合計商船船腹量は34.87%となっています。

(2) 総会決議 A.1088 に基づく条約改正案

2013年に開催された第28回IMO総会において、現存船に対するバラスト水処理装置の搭載義務期限を、最大5年間延長することを認める総会決議 A.1088(28)が採択されました。また、条約発効後、速やかに同決議に基づく B-3 規則の改正を行うことが勧告されています。

審議の結果、総会決議 A.1088(28)の内容を反映した B-3 規則改正案が承認されました。同改正案は、バラスト水管理条約の発効後に開催される MEPC で採択される予定です。

同改正案に従ったバラスト水処理装置の搭載義務期限

条約発効日の前日迄に起工した船舶: 発効日後の最初の IOPP 更新検査まで

条約発効日以降に起工する船舶: 完工日まで

(3) バラスト水処理装置の搭載時期見直し

今回の会合でリベリアは、修繕ドックの容量不足が予想されることから、バラスト水の交換を適切に行うことを条件に、現存船へのバラスト水処理装置の搭載期限を更に延長することを提案しました。審議の結果、同提案に対して、今回の会合では特段のアクションは行わず、関係国に対し、次回以降の会合で更なる情報提供を要請することになりました。

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NOTES:

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(4) バラスト水処理装置の承認

同条約で規定されるバラスト水処理装置は、IMO のガイドラインに従って主管庁による承認（型式承認）が必要とされています。なお、同装置に有害水生生物や病原菌を殺傷・減菌するための「活性物質」が使用される場合は、主管庁による型式承認に先立ち、IMO による活性物質単体の承認（基本承認）、及び処理装置としての総合的な承認（最終承認）が必要となります。

今回の会合では、活性物質を用いたバラスト水処理装置について、3 件の最終承認が与えられました。主管庁による型式承認を取得し、実際に船舶に搭載可能な装置の数は、活性物質を用いない装置も含め、65 件です。承認された装置のリストは、IMO のウェブサイトで開催されています。

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

(5) バラスト水処理装置の型式承認のための G8 ガイドラインの改正

現行の G8 ガイドラインに従って型式承認されたバラスト水処理装置が、使用環境によっては基準を満たすことが出来ない可能性があることから、試験条件強化のために G8 ガイドラインの見直しを行うことについて、2014 年に行われた MEPC 66 より審議が行われています。審議の結果、通信部会を再び設置して、G8 ガイドラインの見直し作業を継続することが合意されました。

2. 温室効果ガス(GHG)関連

温室効果ガス(GHG)の削減を国際的に定めた国連気候変動枠組条約(UNFCCC)の京都議定書では、外航船舶をその対象外としており、IMO が国際海運からの GHG 排出の抑制対策を検討することとされています。

2011 年 7 月に開催された MEPC 62 において、エネルギー効率設計指標(EEDI)及び船舶エネルギー効率管理計画(SEEMP)の船舶への備え付け等を義務化する MARPOL 条約 附属書 VI の改正が採択され、2013 年 1 月 1 日に発効しました。

(1) EEDI 規制に関する技術開発状況レビュー

MARPOL 条約 附属書 VI 第 21.6 規則では、フェーズ 1 の開始時点及びフェーズ 2 の中間点において、EEDI の改善に寄与する技術の開発動向をレビューし、要すれば、フェーズの開始時期、関連船種のリファレンスライン算定パラメータ及び削減率を改正することが規定されています。2014 年に行われた MEPC 67 において、日本をコーディネータとする通信部会が設置され、今回の会合でその中間報告が提出されました。

通信部会の報告では、フェーズ 2 は達成可能との結論に至り、削減率等の維持を推奨していましたが、審議の結果、レビューに使用したデータ数の不足等の理由から、レビューを継続して行うことになりました。このため、通信部会は EEDI データベースの解析等の作業を追加し、レビュー結果の最終報告を次回 MEPC 70 に提出することが合意されました。

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(2) 最低推進出力ガイドラインの改正

EEDI 規制値への適合が要求される船舶における、荒天下での操船性を維持するため、最低推進出力ガイドラインが策定されました。同ガイドラインでは、レベル 1 及びレベル 2 の評価手法が規定されており、2015 年に開催された MEPC 68 において、レベル 1 の要件を強化する最低推進出力ガイドラインの一部改正が採択されました。レベル 2 の評価手法については、欧州と日本で実施されている研究開発プロジェクトの成果が報告される 2016 年後半以降に、要件を見直すことが合意されています。本件に関してテクニカル・インフォメーション No.1039 を発行していますので、詳細につきましては、そちらをご確認下さい。今回の会合では、SHOPERA (欧州)と JASNAOE (日本)で実施されている研究開発プロジェクトの進捗報告のための SHOPERA と JASNAOE の共同プレゼンが行われました。

(3) EEDI 計算ガイドラインの改正

2014 年に開催された MEPC 67 において、二元燃料機関を搭載した船舶の EEDI を計算するために、EEDI 計算ガイドラインが改正されました。一方、同ガイドラインでは、ガス燃料を主燃料とする船舶の EEDI 計算方法が規定されているものの、ガス燃料を主燃料としない船舶に対する規定がないことから、中国より、EEDI 計算方法の改正提案がありました。審議の結果、ガス燃料を主燃料としない船舶においても、ガス燃料使用による効果を EEDI に反映することは支持されたものの、中国の提案は定義等不明点が多く分かりづらいことから、中国が提案文書を改善した上で、次回 MEPC 70 において再検討することが合意されました。

(4) MARPOL 条約 附属書 VI 4 章の免除

修繕などの理由で、内航船が単一の国際航海に従事する場合において、SEEMP の所持を適用外とする取扱いが、MEPC 68 にて韓国より提案されました。今回の会合では、この提案が MEPC サークュラーとして採用され (添付 6. MEPC.1/Circ.863 参照)、今後同サーキュラーの内容を明記するために MARPOL 附属書 VI 4 章の改正を検討することが合意されました。

(5) 燃費報告制度

2013 年に開催された MEPC 65 において、国際海運からの更なる GHG 排出削減策として、現存船を含めた船舶に対し、運航データのモニタリング、報告及び認証を課す燃費報告制度を検討することが合意され、MEPC 66 (2014 年 4 月)から本格的な審議が開始されました。

2015 年 5 月に開催された MEPC 68 及び 2015 年 9 月に開催された中間会合において、船舶からの収集データを年間燃料消費量、年間航海距離及び年間稼働時間とし、実貨物量データの代わりに載貨重量 (DWT) とすることが合意され、制度案が基本合意されました。

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今回の会合では、MEPC 68 及び中間会合の議論をふまえ、燃費報告制度の導入に向けた条約改正等が審議されました。審議の結果、以下に示す MARPOL 条約 附属書 VI の改正案が承認され、次回 MEPC 70 における採択のために回章されることになりました。また、燃費報告制度の導入に必要なガイドライン等の策定作業を促進するために、日本をコーディネータとする通信部会を設置することが合意されました。

燃費報告制度に関する条約改正案の概要

| | | |
|-------|---|----------------------------|
| 対象船舶 | ： | 5,000GT 以上 |
| 報告データ | ： | 個船情報、主要目、燃料消費量、航海距離、航海時間など |
| 対象期間 | ： | 毎年 1 月 1 日 - 12 月 31 日 |

(6) 船舶からの GHG 排出削減目標の設定

2015 年に開催された MEPC68 より、国際海運からの GHG 排出削減目標の設定、若しくは同目標の設定に向けた検討スケジュールを策定することについて検討が行われています。審議の結果、燃費報告制度の導入を早急に進めると同時に、国際海運からの GHG 排出削減目標の設定について、次回 MEPC 70 で継続審議を行うことになりました。

3. 大気汚染防止関連

(1) 硫黄分濃度規制値における燃料油供給可能性のレビュー

MARPOL 条約 附属書 VI 第 14.8 規則では、燃料油中の硫黄分濃度を 0.5% に強化する前に、規制値に適合した低硫黄燃料油が十分に供給可能であるかをレビューすることが規定されています。同レビューは 2018 年までに完了し、レビュー結果によって規制強化の開始時期を 2020 年、若しくは 2025 年に決定することが規定されています。

今回の会合ではレビューを実施する運営委員会における進捗報告が行われました。審議の結果、硫黄分濃度が 0.5% 未満である燃料の供給可能時期について引き続き調査を継続する、との運営委員会の進捗報告を了承し、レビュー結果の最終報告が行われる次回 MEPC 70 において、規制強化の開始時期を最終決定する事が基本合意されました。

(2) 燃料油の品質管理

MARPOL 条約 附属書 VI 第 18 規則では、有害な添加物の含有禁止等、船舶に供給される燃料油の品質が規定されています。MEPC 67 では、燃料油の品質を確保するためのガイダンスの作成及び現行条約の規制内容を検討するための通信部会が設置されました。

今回の会合では、通信部会で作成されたガイダンス案を審議した結果、更なる検討を行う必要があるとされ、通信部会を再度設置して継続審議を行うことが合意されました。なお、燃料油の品質管理に関する現行条約の規制内容は適切であるとの意見が大勢を占めたため、条約上の規制内容に対する更なる審議は行わないことが合意されました。

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4. 貨物艙洗浄水の取り扱い

MARPOL 条約 附属書 V に規定される海洋環境に有害な物質を含む貨物艙洗浄水の排出制限に関し、陸上の受入施設が不足していることから、揚げ荷港及び次の港に受入施設がない場合には、貨物残渣の最小化を行う等の一定の条件を満たすことで海洋への投棄を認める MEPC.1/Circ.810 が 2013 年に発行されています。同サーキュラーでは、2015 年末までの経過措置が認められており、今後の取り扱いについて審議が行われました。

審議の結果、同サーキュラーの適用期間を延長しても、海洋環境に有害な物質を含む貨物艙洗浄水に対する受入施設の設置が進むとは考えられないことから、同サーキュラーの適用期間の延長は行わないことになりました。港湾における受入施設の不備が発見された場合には、MEPC.1/Circ.834 に規定される手順にて報告を受けた旗国政府より、IMO に通知を行うことが合意されました。

5. 採択された強制要件

今回の会合で採択された強制要件は以下の通りです。

(1) 有害液体物質の分類のためのガイドラインの一部改正

GESAMP (国連海洋汚染専門家会議) のハザード評価手順が改正されたことに伴い、MARPOL 条約 附属書 II 付録 I に規定される有害液体物質の分類のためのガイドラインの一部改正。

発効日: 2017 年 9 月 1 日 (添付 1. resolution MEPC.270(69)参照)

(2) NO_x 三次規制適合に係るエンジンの運転モードの航海日誌への記録

NO_x 三次規制が適用されるエンジンのうち、二次規制と三次規制の両方の認証を取得しているエンジン及び二次規制のみの認証を取得しているエンジンについて、NO_x 排出規制海域 (NO_x ECA) 出入時及び NO_x ECA 内におけるエンジンの始動及び停止時に、エンジンの運転モード (二次規制モード/三次規制モード) 及び稼働・停止の状態 (ON/OFF) を、日時と船の位置とともに航海日誌に記録することを義務付ける MARPOL 条約 附属書 VI の改正。

発効日: 2017 年 9 月 1 日 (添付 2. resolution MEPC.271(69)参照)

(3) ガス専焼エンジン及び二元燃料エンジンの認証に関する NO_x テクニカルコードの改正

MEPC 67 にて採択された、ガス専焼エンジンを NO_x 規制の対象とする MARPOL 条約 附属書 VI の改正に伴う、ガス燃料を用いて試験が実施されるガス専燃エンジン及び二元燃料エンジンの試験要件に関する NO_x テクニカルコードの改正。

発効日: 2017 年 9 月 1 日 (添付 3. resolution MEPC.272(69)参照)

(4) バルト海における旅客船からの污水排出

バルト海を航行する旅客船からの污水排出を、新造旅客船は 2019 年 6 月 1 日以降、現存旅客船は 2021 年 6 月 1 日以降禁止する MARPOL 附属書 IV の改正。

なお、バルト海に入域後、東経 28° 10' 以東の寄港地まで直接航行する現存旅客船からの污水排出は、2023 年 5 月 31 日まで認められる。

発効日: 2017 年 9 月 1 日 (添付 4/5. resolution MEPC.274(69)/MEPC.275(69)参照)

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本MEPC 69の審議概要につきましてはIMO ホームページにも掲載されていますのでご参照下さい
<http://www.imo.org/MediaCentre/MeetingSummaries/MEPC/Pages/Default.aspx>

なお、本件に関してご不明な点は、以下の部署にお問い合わせください。

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添付:

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 | R: readily biodegradable | >1000 | >1 |
| 1 | ≥1 - <2 | ≥1 - <10 | NR: 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 ₅₀ /ATE (mg/kg) | C2 Dermal toxicity LD ₅₀ /ATE (mg/kg) | C3 Inhalation toxicity LC ₅₀ /ATE (mg/l) | D1 Skin irritation & corrosion | D2 Eye irritation & corrosion | D3 Long-term health effects |
| 0 | >2000 | >2000 | >20 | not irritating | not irritating | C - Carcinogenic |
| 1 | >300 - ≤2000 | >1000 - ≤2000 | >10 - ≤20 | mildly irritating | mildly irritating | M - Mutagenic |
| 2 | >50 - ≤300 | >200 - ≤1000 | >2 - ≤10 | irritating | irritating | R - Reprotoxic |
| 3 | >5 - ≤50 | >50 - ≤200 | >0.5 - ≤2 | severely irritating or corrosive 3A Corr. (≤4hr) 3B Corr. (≤1hr) 3C Corr. (≤3min) | severely irritating | Ss - Sensitising to skin Sr - Sensitising to respiratory system A - Aspiration hazard T - Target Organ Toxicity N - Neurotoxic I - 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 |
| NT : not tainting (tested) T : tainting test positive | Fp : Persistent Floater F : Floater S : Sinking Substances | 0 | no interference no warning |
| | | 1 | slightly objectionable warning, no closure of amenity |
| | | 2 | moderately objectionable possible closure of amenity |
| | | 3 | highly objectionable closure of amenity |

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_x 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_x 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_x 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_x)

- 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_x" is replaced with the symbol "NO₂".

ANNEX 3

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

**AMENDMENTS TO THE NO_x 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_x Technical Code 2008) mandatory under that Annex,

HAVING CONSIDERED, at its sixty-ninth session, draft amendments to the NO_x 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_x 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_x 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 |
|--------|------------------------------------|

"

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_x 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:

| Factors in the formula (6) (7) (8) | | Formula for factors |
|---|---|---|
| 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_x emission depends on ambient air conditions, the NO_x 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_x 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 O₂ – 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 ³ | Oxygen | % m/m |
| Pressure at boiling point | | bar (abs) | Sulphur | % m/m |
| | | | Methane, CH ₄ | mol% |
| | | | Ethane, C ₂ H ₆ | mol% |
| | | | Propane, C ₃ H ₈ | mol% |
| | | | Isobutane, i C ₄ H ₁₀ | mol% |
| | | | N-Butane, n C ₄ H ₁₀ | mol% |
| | | | Pentane, C ₅ H ₁₂ | mol% |
| | | | C6+ | mol% |
| | | | CO ₂ | 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:

"

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

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)²

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."

* 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 "

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.

4 ALBERT EMBANKMENT
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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.