標題

MEPC 75 の審議結果の紹介

ClassNK
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各位

2020 年 11 月 16 日から 20 日に第 75 回海洋環境保護委員会（MEPC 75）が開催されました。今回の会合は、新型コロナウィルス感染拡大の影響により、ビデオ会議での開催となりました。
今般、IMO より MEPC 75 の議事録及び決議並びにサーキュラが発行されたことから、次の通り同会合の情報及び審議結果をお知らせ致します。

1. 温室効果ガス（GHG）関連
国際海運からの温室効果ガス（GHG）排出の抑制対策は IMO にて検討が進められており、現在までにエネルギー効率設計指標（EEDI）、エネルギー効率管理計画（SEEMP）による規制、及び燃料消費実績報告制度（DCS）が導入されています。
また、2018 年 4 月に開催された MEPC 72 では、GHG 削減目標と GHG 排出削減策の候補を盛り込んだ IMO GHG 削減戦略が採択され、脱炭素化に向けた GHG 削減手法についての検討が行われています。

(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、EEDI の改善に寄与する技術の開発動向を定期的にレビューし、要すればフェーズの開始時期、及び削減率を見直すことが規定されています。

(i) EEDI フェーズ 3 規制の見直し
フェーズ 3 の早期実施や削減率について、MEPC 74 で承認された MARPOL 条約附属書 VI の改正案が採択されました。改正された規定は次の通りです。
（添付 1： 決議 MEPC.324(75) 参照）
- 一般貨物船、LNG 運搬船、クルーズ客船は適用開始を 2025 年から 2022 年に前倒し、削減率は 30%を維持。
- 15,000DWT 未満のガス運搬船（LPG 運搬船等）は 2025 年の適用開始を維持するが、15,000DWT 以上の大型ガス運搬船（LPG 運搬船等）は適用開始を 2025 年から 2022 年に前倒しする。削減率はサイズによらず 30%を維持。

（次頁に続く）

- コンテナ船の規制適用開始を 2025 年から 2022 年に前倒し、削減率は次の通り船のサイズにより定めた。

DWT	削減率
10,000 以上　15,000 未満	15−30% (DWT に応じて線形補間)
15,000 以上　40,000 未満	30%
40,000 以上　80,000 未満	35%
80,000 以上　120,000 未満	40%
120,000 以上　200,000 未満	45%
200,000 以上	50%

- その他の船種は、現行の規定通り 2025 年の適用開始を維持し、削減率についても 30%を維持。

(ii) 超大型ばら積貨物船のリファレンスライン
参考とする船舶のデータがなく、必要以上に厳しい規制値となっていた 279,000DWT 以上の超大型ばら積貨物船について、規制値の基準となる EEDI リファレンスラインを修正する MARPOL 条約 附属書 VI の改正が採択されました。
（添付 1： 決議 MEPC.324(75) 参照）

(iii) EEDI フェーズ 4 規制の検討
MEPC 74 では、EEDI フェーズ 4 規制導入の必要性を検討するために、日本をコーディネータとする通信部会が設置されました。
今回の会合には、通信部会から、エネルギー効率改善のための新技術及び代替燃料に関する情報収集・分析、EEDI 規制と IMO GHG 削減戦略の関係性の検討などを進めていることを含む中間報告書が提出されました。通信部会は作業を継続し、次回の MEPC 76 で最終報告を行う予定です。

(2) EEDI 規制と最低推進出力規制
荒天下における操船性を維持するため、MEPC 65 において暫定の最低推進出力ガイドラインが策定されました。さらに MEPC 71 では、暫定ガイドラインの適用期間をフェーズ 2 まで延長することが合意されています。一方、この最低推進出力規制により一定の出力を確保する必要がある反面、フェーズ 3 規制が強化されることから、フェーズ 3 への対応がさらに困難になることが懸念されています。
EEDI 規制と最低推進出力規制の両方を満足するために、MEPC 74 では、通常航海時には機関出力を制限し、非常時（荒天時）は出力制限を解除することを認める出力制限・非常用出力のコンセプトについて審議を行いました。審議の結果、さらなる検討が必要であることから、出力制限・非常用出力のコンセプトについて継続して検討を行うこと、さらに並行して、最低推進出力ガイドラインを最終化するための検討作業を進めることが合意されました。
今回の会合では、時間の制約上、十分な審議時間を取れなかったことから、コレスポンデンスグループを設置して、次回の MEPC 76 に向けて審議を継続することが合意されました。

（次頁に続く）

(3) IMO GHG 排出削減戦略

MEPC 72 で採択された IMO GHG 削減戦略では、2030 年までの短期削減目標と 2050 年までの中長期削減目標が規定されています。短期削減目標を達成するための短期対策のうち、新造船に対する対策は 1.(1)項の EEDI 規制の強化で対応する一方、就航船に対する対策の検討が MEPC における喫緊の課題となっていました。

今回の会合では、昨年の 10 月に開催された第 7 回 GHG 中間会合にて合意された 1) 技術アプローチと 2) 運航アプローチによる短期対策について審議を行い、これらを制度化するための MARPOL 条約 附属書 VI の改正案が承認されました。

(i) 技術アプローチ (EEXI 規制)

- EEDI と同様の燃費性能指標を就航船に対して適用し、個船ごとの燃費性能指標である Energy Efficiency Existing Ship Index（EEXI）値を算出する。
- EEDI 規制で使用している船種毎の燃費平均値（リファレンスライン）を使用し、船の大きさによって規定される削減率を乗じて EEXI 規制値を算出する。
- EEXI 値が EEXI 規制値を満足できない場合、エンジンの出力制限を行う等の対策が必要となる。

(ii) 運航アプローチ (燃費実績の格付け制度)

- IMO は、DCS のデータを基に、船種毎のリファレンスラインを作成し、そこから燃費実績（CII, Carbon Intensity Indicator）との乖離量をもとに、A-E の 5 段階格付けのための閾値を作成する。
- 各船舶は、DCS のためのデータとともに、1 年間の燃費実績の計算手順、及び旗国への報告手順を SEEMP に記載する。
- 旗国は、報告された 1 年間の燃費実績を基に、各船舶について、A-E の 5 段階格付けを行う。
- E、又は 3 年連続で D の低評価となった船舶は燃費改善のための措置を行う。
- A または B の高評価を受けた船舶に対して、加盟国や港湾当局などは、インセンティブを与えることを推奨する。

これらの改正案は、2021 年 6 月に開催される MEPC 76 にて採択に向けた審議が行われ、最短で 2023 年初頭に発効する見込みです。また EEXI 及び燃費実績の格付け制度に関する詳細な要件を規定するガイドライン案を策定するために、MEPC 76 の前に中間会合を開催することも合意されました。

(4) GHG 排出削減のための中長期対策

IMO GHG 削減戦略の中長期削減目標を達成するためには、海運の抜本的な脱炭素化を促進するための中長期対策が必要になります。

今回の会合では、IMO GHG 削減戦略の中長期削減目標を見直すべきとの提案がなされましたが、短期対策の実施及びその効果のモニターを優先させるべきとして、合意されませんでした。

これとは別に、中長期対策案として、低・脱炭素技術の研究開発を促進するために、国際的な研究開発委員会（IMRB, International Maritime Research and Development Board）、及び研究開発基金（IMRF, International Maritime Research Fund）を創設する提案がありました。また、市場メカニズムによる経済的インセンティブ手法の提案もありました。

審議の結果、これらの中長期対策案について、継続して検討を行うことになりました。

（次頁に続く）

(5) IMO GHG Study

MEPC 74 において、国際海運からの GHG 排出量などを推定する「第 4 次 IMO GHG スタディ 2020」を作成することが合意され、作業が進められてきました。

今回の会合では、次の内容を含む報告書案が提出され、承認されました。

- 2018 年時点の国際航海船からの CO2 排出量(船舶ベース)は、約 9.19 億トンであり、対 2012 年比では 8.4%増、対 2008 年比ではほぼ変わらない水準にある。
- CO2 排出量の予測として、1.(3)項で述べた排出削減対策を講じない場合は、2008 年の CO2 排出量に比べて 2050 年には 90%から 130%の間で推移する。

2. バラスト水管理条約関連 - バラスト水処理装置搭載時の性能確認 -

今回の会合では、前回 MEPC 74 にて承認されたバラスト水処理装置搭載時の試運転にてバラスト水の分析を行うことを義務付けるための、バラスト水管理条約の改正案を採択しました。

また、バラスト水処理装置搭載時の試運転に関するガイダンスの改正も併せて承認されました。

改正されたガイダンスでは、主に次の項目が規定されています。

- バラスト水処理装置の搭載工事が適切に行われたことを確認するため、同装置の試運転時にバラスト水の分析を行う。
- 試運転では、生物濃度に関わらず造船所周辺の水を使用する。
- バラスト水の分析は船上で実施可能な簡易分析手法で実施し、D-2 基準に規定される L サイズ（50um 以上）と S サイズ（10um 以上 50um 未満）の生物に対する分析を行う。分析結果を得るために長時間を要する病原性バクテリアに対する分析は不要。

（添付 2 : 決議 MEPC.325(75) 、添付 3 : BWM.2/Circ.70/Rev.1 参照）

3. AFS 条約の改正

2008 年に発効した船舶の有害な防汚方法の規制に関する国際条約（AFS 条約）では、船底塗料として有機スズ化合物を使用することが禁止されています。

MEPC 74 では、新たに有害性が確認されたシブトリンを禁止物質に加える方針が合意されました。また、既存船に既に塗布されている船底塗料にシブトリンが含まれている場合、当該塗料を除去する必要性について、更に検討を行うことになりました。

今回の会合では、シブトリンを禁止物質に加えるための AFS 条約改正案が承認されました。また、既存船に既に塗布されている船底塗料について、直近に塗布した最外層の塗料にシブトリンが含まれている場合、次の取り扱いとすることが条約改正案に規定されました。

- 総トン数 400GT 以上の外航船は、塗料を除去、又は溶出防止塗料を上塗り。
- 総トン数 400GT 未満の外航船は、沿岸国が認めれば、対応不要。
- 内航船は、対応不要。

なお、既存船に塗布されている最外層の塗料にシブトリンが含まれていない場合、特段の対応は不要となる見込みです。

（次頁に続く）

4. その他の議題

(1) 北極海における重質燃料油の規制

今後、海運が活発化することが見込まれる北極海域では、油流出事故による生態系や環境への悪影響が懸念されており、これまでの会合で北極海における重質燃料油の保持・使用に対する規制について検討を行ってきました。

今回の会合では、北極海において重質燃料油を船上で使用すること、及び重質燃料油を使用する目的で船上に保持することを禁止する MARPOL 条約 附属書 I の改正案が承認されました。本改正案は次回の MEPC 76 で採択される予定です。なお、貨物として重質油を輸送することは認められます。

5. 採択された強制要件

今回の会合で採択された主な強制要件は以下の通りです。

(1) EEDI フェーズ 3 規制の強化 (1.(1) (i)項参照)

EEDI フェーズ 3 規制を強化するための MARPOL 条約 附属書 VI の改正が採択されました。なお、現行 EEDI フェーズ 3 規制は、2025 年以降に建造契約が交わされる新造船に対し、多くの船種で基準となるリファレンスラインから 30%削減するものですが、今回の改正により、船種によって規制開始の前倒しや削減率の強化が規定されます。

発効日:2022 年 4 月 1 日

(2) 超大型ばら積み貨物船の EEDI リファレンスライン (1.(1) (ii)項参照)

超大型ばら積み貨物船について、規制値の基準となる EEDI リファレンスラインを修正する MARPOL 条約 附属書 VI の改正が採択されました。

発効日:2022 年 4 月 1 日

(3) 燃料油のサンプリング

本船上で使用される燃料油を意図した「in use sample」と、使用目的で船上に保持される燃料油を意図した「on-board sample」の 2 つの燃料油サンプリングに関する MARPOL 条約 附属書 VI の改正が採択されました。

また、同燃料油サンプル中の硫黄分を確認するための検証手順を規定する同条約 附属書 VI 付録 VI の改正も採択されました。

（添付 1: 決議 MEPC.324(75), 及び添付 4: MEPC.1/Circ.889 参照）

発効日:2022 年 4 月 1 日

(4) バラスト水処理装置搭載時の性能確認 （2.項参照）

バラスト水処理装置の搭載時に試運転及びバラスト水の分析を行うことを義務付けるためのバラスト水管理条約の改正が採択されました。

発効日:2022 年 6 月 1 日

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MEPC 75 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。
https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-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. 決議 MEPC.324(75)
2. 決議 MEPC.325(75)
3. BWM.2/Circ.70/Rev.1
4. MEPC.1/Circ.889

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.[1]

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_X) 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

[1] Refer to ISO 8754:2003 Petroleum products – Determination of sulphur content – Energy-dispersive X-ray fluorescence spectrometry.

developed by the Organization.[2] The onboard sample shall be drawn taking into account the guidelines developed by the Organization.[3]

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.[2]

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,[4] via electronic communication:

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2 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).

3 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).

4 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 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
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"

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[5] in accordance with regulation 18.8.1, hereafter referred to as the "MARPOL delivered sample" as defined in regulation 2.54.

[5] 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,[6] 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"[7] 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[8] 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.

6 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).

7 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).

8 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)[9] 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

<table>
<tr><td colspan="3">On the basis of the test method referred to in regulation 2.52 of this Annex</td></tr>
<tr><td>Applicable limit % m/m: V</td><td>Result 2.5.1: X ≤ V</td><td>Result 2.5.2: X > V</td></tr>
<tr><td>0.10</td><td rowspan="2">Met the requirement</td><td rowspan="2">Not met the requirement</td></tr>
<tr><td>0.50</td></tr>
<tr><td></td><td colspan="2">Result 'X' reported to 2 decimal places</td></tr>
</table>

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

[9] 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[10] 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':

[10] 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)[11] 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),[12] 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[13]

<table>
<tr><td colspan="5">On the basis of the test method referred to in regulation 2.52 of this Annex</td></tr>
<tr><td>Applicable limit %m/m:
V</td><td>Test margin value:
W</td><td>Result 4.5.1:
Z ≤ V</td><td>Result 4.5.2:
V < Z ≤ W</td><td>Result 4.5.3:
Z > W</td></tr>
<tr><td>0.10</td><td>0.11</td><td rowspan="2">Met the requirement</td><td rowspan="2">Met the requirement</td><td rowspan="2">Not met the requirement</td></tr>
<tr><td>0.50</td><td>0.53</td></tr>
<tr><td></td><td></td><td colspan="3">Result 'Z' reported to 2 decimal places</td></tr>
</table>

[11] Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

[12] Reproducibility (R) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used.

[13] 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."

***

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.*"

* 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^3. 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 ≥ 50 µm and ≥ 10 µm to < 50 µm, 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.

***

SUSTAINABLE SHIPPING FOR A SUSTAINABLE PLANET

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:

[*] 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.