標題

燃料油サンプリングポイントの設置又は指定について

ClassNK
テクニカル
インフォメーション

No. TEC-1261
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各位

主題に関し、燃料油サンプリングポイントの設置又は指定についての ClassNK テクニカル・インフォメーション No.TEC-1260(2022 年 3 月 25 日付)の一部修正を行いましたのでお知らせいたします。
これにより、ClassNK テクニカル・インフォメーション No.TEC-1260 を絶版といたします。

2020 年 11 月の IMO 第 75 回海洋環境保護委員会(MEPC75)において、燃料油中の硫黄分濃度の確認のための燃料油サンプリング及びその検証手順に係る MARPOL 条約附属書 VI の改正(決議 MEPC.324(75))が採択され、2022 年 4 月 1 日に発効いたします。
本改正において、"In-use sample"及び"On board sample"の用語が新たに定義されており、以下に当該サンプルの概要を記載いたします。

In-use sample: 本船上で使用される燃料油を意図しており、燃料油サービスタンク下流の燃料油供給系統から採取されるサンプル
On board sample: 使用目的で船上に保持される燃料油を意図しており、燃料油ストレージタンクから燃料油セットリングタンクへの燃料油移送系統や燃料油セットリング/サービスタンク等から採取されるサンプル

本テクニカル・インフォメーションでは、本改正においてサンプリングポイントの設置又は指定が要求される"In-use sample"について、以下の通りお知らせいたします。

1. 対象
現存船を含む国際航海に従事する 400GT 以上の船舶、すべての固定式又は浮体式掘削リグ及びその他のプラットフォームの燃料油供給系統(主機、補機、ボイラ、焼却炉、イナートガス発生装置、非常用発電機等のすべての燃料油システム(低引火燃料油供給系統を除く))

2. 適用
(1) 2022 年 4 月 1 日以降に起工又は同等段階にある船舶は登録検査時
(2) 2022 年 4 月 1 日より前に起工又は同等段階にある船舶は 2023 年 4 月 1 日以降の最初の IAPP の更新検査まで
ただし、日本籍船舶にあって 2022 年 4 月 1 日以降に完工する船舶は登録検査時

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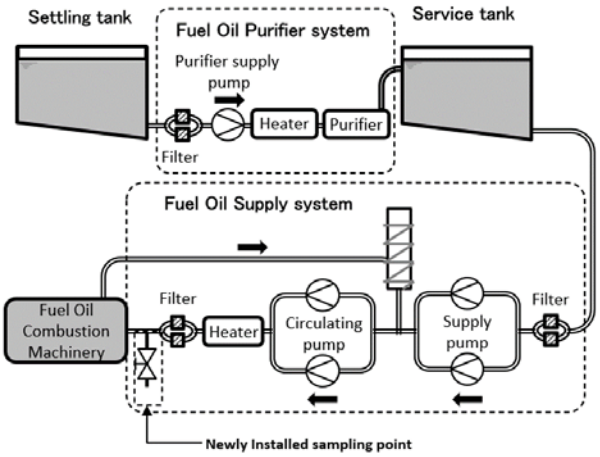
3. 燃料油サンプリングポイントの設置又は指定
MEPC.1/Circ.864/Rev.1 を考慮して、船内で使用される燃料油の代表的なサンプルを採取するために燃料油サンプリングポイントを設置又は指定することが要求されます。
なお、MEPC.1/Circ.864/Rev.1 にて要求されるサンプリングポイントの要件は以下の通りです。
(1) 容易且つ安全に接近できること
(2) 異なる品質の燃料油の使用が考慮されていること
(3) 燃料油サービスタンク下流側であること
(4) 可能な限り機器入口に近く、且つ、燃料油の種類、流量、温度及びサンプリングポイント下流側の圧力が考慮されていること
(5) 識別が容易なように明確に表示し、管線図または他の関連文書に記載すること
(6) 各サンプリングポイントは、加熱面や電気機器から遮蔽された位置に配置し、遮蔽装置または当該遮蔽構造は、そのような表面や機器への接触を防ぐために、燃料油サービスラインの設計圧力下での漏れ、飛沫又は噴霧に耐えるのに十分頑丈なものであること
(7) サンプリングポイントには、ドレンタンクまたはその他の安全な場所への適切な排油装置を備えること

4. 既存設備の活用、改造が実施される場合の取扱い等
既存設備(例えば、オイルフィルターのエア抜き、ドレン抜き等)をサンプリングポイントとして指定することが可能です。また、複数の燃焼機関への燃料油供給系統が共通の場合には、サンプリングポイントは一か所を指定するだけで差支えありません。この場合、サンプリングポイントの設置のために改造が実施されない限り、図面承認の必要はありません。
一方、上記 2.(2)に示す船舶でサンプリングポイントの設置のために改造が実施される場合には、図面承認を受ける必要があります。改造に先立ち、改造の内容を示した燃料油管線図を検査を実施する支部・事務所又は機関部宛にご提出下さい。



サンプリングポイント設置（改造）例

（次頁に続く）

なお、改造に関し、鋼船規則にて要求されるサンプリングポイントに係わる主な要件は以下の通りです。

(1) 燃料油管
  (i) JIS 等の規格に適合した材料を使用すること。
  (ただし、設計圧力が 1MPa 以上又は設計温度が 230℃を超える管は、鋼船規則 K 編の規定に適合した材料(弊会規格材)を使用すること。)
  [鋼船規則 D 編 12 章 12.1.4-2 / 検査要領 D1.1.4(6)(a)]

(2) 燃料油管に用いられる弁及び管取付け物
  (i) JIS 等の規格に適合した構造を有するものであること。
  [鋼船規則 D 編 12 章 12.3.1]
  (ii) JIS 等の規格に適合した材料を使用すること。
  (ただし、設計圧力が 3MPa 以上又は設計温度が 230℃を超える管に用いられる弁及び管取り付け物は、鋼船規則 K 編の規定に適合した材料(弊会規格材)を使用すること。)
  [鋼船規則 D 編 12 章 12.1.4-3 / 検査要領 D1.1.4(6)(c)]
  (iii) 設計圧力が 0.7MPa を超える又は設計温度が 60℃を超える管に用いられる弁及び管取付け物は、伸び率 12%未満の鋳鉄品を使用しないこと。
  [鋼船規則 D 編 12.1.5-2(3)(b)]
  (iv) 呼び圧力 0.5MPa 以上のものを使用すること。ただし、設計圧力が 1MPa を超え、かつ設計温度が 60℃を超えるものにあっては、呼び圧力 1.6MPa 以上のものとすること。
  [鋼船規則 D 編 13 章 13.9.1-3]

なお、図面のご提出時には、返却先及び図面審査費用の請求先の情報を添えて NK-PASS、メールもしくは郵送にてご提出ください。

5. 検査

(1) 条約検査
検査員が上記 3.の要件に適合していることを確認いたします。2023 年 4 月 1 日以降最初の IAPP の更新検査までに、検査を実施する支部又は事務所にお申込み下さい。
なお、上記 2.(1)に示す船舶につきましては、建造時に上記の検査を実施いたします。

(2) 改造に係る船級検査
上記 2.(2)に示す船舶で改造を実施した場合には、改造の内容に従い、次の検査が要求されますので、検査を実施する支部又は事務所にお申込み下さい。
  (i) 改造箇所の外観検査
  (ii) 燃料油管装置の改造箇所の漏洩試験(設計圧力の 1.5 倍の圧力)

6. IAPP 証書の追補の新書式への書換え

IAPP 証書の追補の書式が変更となり、サンプリングポイントの設置又は指定に関する項目が追加されます。2022 年 4 月 1 日(発効日)以降に証書の発行又は書換えが行われる際に、新書式にて発行いたします。
また、上記 5.(1)に示す検査が完了いたしましたら、IAPP 証書の追補の新書式内の 2.3.4 項にチェックを行います。

（次頁に続く）

なお、MEPC.1/Circ.889 への考慮が要求される On board sample の採取につきましては、燃料油サンプリングポイントの設置及び指定は要求されません。

詳細に関しましては、添付決議 MEPC.324(75)、MEPC.1/Circ.864/Rev.1 及び MEPC.1/Circ.889 を参照ください。

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. MEPC.1/Circ.864/Rev.1:
   船舶で使用される燃料油の硫黄分含有率を検証するための船上サンプリングに関する指針
3. MEPC.1/Circ.889:
   船舶で使用または使用のために運搬される目的の燃料油の船上サンプリングに関する指針

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."

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MEPC.1/Circ.864/Rev.1
21 May 2019

2019 GUIDELINES FOR ON BOARD SAMPLING FOR THE VERIFICATION OF THE SULPHUR CONTENT OF THE FUEL OIL USED ON BOARD SHIPS

1 The Marine Environment Protection Committee, at its seventy-fourth session (13 to 17 May 2019), approved the *2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships*.

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.

3 This circular revokes MEPC.1/Circ.864.

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ANNEX

2019 GUIDELINES FOR ON BOARD SAMPLING FOR THE VERIFICATION OF THE SULPHUR CONTENT OF THE FUEL OIL USED ON BOARD SHIPS

1 Preface

The objective of these Guidelines is to establish an agreed method for sampling to enable effective control and enforcement of liquid fuel oil being used on board ships under the provisions of MARPOL Annex VI.

2 Sampling location

The in-use[1] representative sample or samples should be obtained from a designated sampling point or points. The number and location of designated fuel oil sampling points should be confirmed by the Administration following consideration of possible fuel oil cross-contamination and service tank arrangements. Fuel oil sampling points to be used should fulfil all of the following conditions:

.1 be easily and safely accessible;

.2 take into account different fuel oil grades being used for the fuel oil combustion machinery item;

.3 be downstream of the in-use fuel oil service tank;

.4 be as close to the fuel oil combustion machinery as safely feasible taking into account the type of fuel oil, flow-rate, temperature, and pressure behind the selected sampling point;

.5 be clearly marked for easy identification and described in either the piping diagram or other relevant documents;

.6 each sampling point should be located in a position shielded from any heated surface or electrical equipment and the shielding device or construction should be sturdy enough to endure leaks, splashes or spray under design pressure of the fuel oil supply line so as to preclude impingement of fuel oil onto such surface or equipment; and

.7 the sampling arrangement should be provided with suitable drainage to the drain tank or other safe location.

[1] In-use sample means the sample of fuel oil in use on a ship.

3 Sample handling

The fuel oil sample should be taken when a steady flow is established in the fuel oil circulating system. The sampling connection[2] should be thoroughly flushed through with the fuel oil in use prior to drawing the sample. The sample or samples should be collected in a sampling container or containers and should be representative of the fuel oil being used. The sample bottles 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 sample. The label should include the following information:

.1 sampling point location where the sample was drawn;

.2 date and port of sampling;

.3 name and IMO number of the ship;

.4 details of seal identification; and

.5 signatures and names of the inspector and the ship's representative.

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[2] The sampling connection is the valve and associated pipework designated for sample collection which is connected to the fuel oil service system.

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MEPC.1/Circ.889
7 December 2020

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

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

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

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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.