



Technical Information

Code: **TI-19-06**

Date: **10.11.2019**

Subject: Preparation for the 2020 'Global Sulphur Cap'

Application:

- The limitation on the Sulphur content of fuel oil shall apply to all ships.

Compliance Dates:

1st Jan. 2020:

- The Sulphur content of any fuel oil used on board ships shall not exceed 0.50% m/m on or after 1 January 2020, when the ship operates outside of an emission control area.
RESOLUTION MEPC.280 (70) (Adopted on 28 October 2016). Res. MEPC320 (74) (Adopted 17 May 2019).

1st Mar. 2020:

- Regulation 14.1 of MARPOL Annex VI: The Sulphur content of fuel oil used or carried for use on board a ship shall not exceed 0.50% m/m. *(RESOLUTION MEPC.305 (73) adopted on 26 October 2018).*
- In accordance with this regulation VI/14.1, the prohibition on the carriage of non-compliant fuel oil should be applied to the fuel oil of emergency equipment. This is applicable when resolution MEPC.305 (73) enters into force on 1 March 2020. *(UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI- MEPC.1/Circ.795/Rev.4).*
- Regulation 8 of MARPOL Annex VI & Appendix I: paragraph 2.3.1 and 2.3.2 of supplement to international air pollution prevention certificate are replaced and new paragraphs 2.3.3 is added. The certificate needs to be re-issued in respect of this amendment. *(RESOLUTION MEPC.305 (73) adopted on 26 October 2018).*
- The date of entry into force of Res. MEPC 305(73) "Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship" as it is 1 Mar.2020 does not in any way change the effective date of implementation for the 0.5% Sulphur limit of fuel oil as it is mentioned above. (1 January 2020)

1st Sept. 2021:

- Amendment to regulation 18.8.2 or regulation 14.8 – and appendix VI which circulated via "**notification on early application of the verification procedures for a MARPOL ANNEX VI fuel oil sample**" in the MEPC 74 expected to be entered into force in year 2021 following their adoption at the seventy-fifth session of the Marine Environment Protection Committee (MEPC 75 – spring 2020).
- Draft Amendment to regulation 14 – new paragraph 11 reads as follows:
For a ship constructed before entry into force of these requirements, the sampling point(s) referred to in paragraph 10 shall be fitted or designated no later than the first renewal survey that occurs 12 months or more after the entry into force of this regulation.
- In accordance with the above amendments the sampling point(s) need to be installed in new ship which delivered after Sept.2022 and also in the existing ship no later than the first renewal survey of IAPP certificate after Sept.2022.

Descriptions & requirements:

History of Regulations in related to fuel oil Sulphur content:

The date of 1 Jan. 2020 was set in the regulations adopted in 2008. However, a provision was adopted, requiring IMO to review the availability of low Sulphur fuel oil for use by ships, to help Member States determine whether this global limit on Sulphur emissions from international shipping shall come into effect on 1 Jan. 2020 or be deferred until 1 Jan. 2025.

IMO's Marine Environment Protection Committee (MEPC 70), in October 2016, based on the study related to "Assessment of fuel oil availability" decided that the 0.50% limit shall apply from 1 Jan. 2020.

The date 1 Jan. 2020 is set in the MARPOL treaty, there can be no change in this date. This limit will be replaced by 3.5% Sulphur limit which has been in effect since 1 Jan. 2012.

The new global limit will not change The limit of 0.1 % established for ECAs since 1 Jan. 2015.

Prohibition on the carriage of non-compliant fuel oil:

The carriage ban refers to the MARPOL amendment adopted in 2018 MEPC 305(73) to prohibit the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship which is entered into force from 1 Mar. 2020 is not applicable to fuel oil carried as cargo in accordance with Reg. 2.9 or for ships fitted with an approved equivalent means of compliance in accordance with regulation 4 ANNEX VI.

So, carriage of fuel oil for use on board ships will be prohibited from 1 Mar. 2020 if the Sulphur content exceeds 0.50%.

Any sanctions for this new amendment to Sulphur content of fuel oil are established by individual Parties to MARPOL, as flag and port States. IMO does not set fines of sanctions - it is down to the individual State Party.

Requirement of fuel oil test:

At the MEPC (74), approved amendments to appendix VI of MARPOL Annex VI on Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8), providing an agreed method to determine whether the fuel oil delivered to, in-use or carried for use on board a ship is in accordance with the applicable Sulphur limit of regulation 14 of MARPOL Annex VI.

Member Governments are invited to apply the approved amendments to appendix VI of MARPOL Annex VI, in advance of their entry into force. (Year 2021).

In accordance with this new verification procedure (Appendix VI) the Sulphur limit of fuel oil sample will be as follow:

- 1- MARPOL delivered fuel oil sample – the result of test refers as X in table 1.
- 2- In-use and onboard sample: the test result does not exceed the specification limit of + 0.59R (where R is the reproducibility of the test method) - the result of test refers as Z in table 2.

Table 1: On the basis of the test method referred to in regulation 2.52 of this Annex.

Applicable limit % m/m: V	Result of test (2.5.1): $X \leq V$	Result of test (2.5.2): $X > V$
0.10	Met the requirement	Not met the requirement
0.50		
Result "X" reported to 2 decimal places		

Table 2: On the basis of the test method referred to in regulation 2.52 of this Annex.

Applicable limit %m/m: V	Test margin value: W	Result of test (4.5.1): $Z \leq V$	Result of test (4.5.2): $V < Z \leq W$	Result of test (4.5.3): $Z > W$
0.10	0.11	Met the requirement	Met the requirement	Not met the requirement
0.50	0.53			
Result "Z" reported to 2 decimal places				

New paragraphs 52, 53, 54, 55 and 56 are added to the Reg.VI/2 after their entry into force, (Sept 2021.):

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. – * refer to the ISO 8754:2003*

53 Low-flashpoint fuel means gaseous or liquid fuel oil having a flashpoint lower than otherwise permitted under paragraph 2.1.1 of SOLAS regulation II-2/4.

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

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

Sampling point need to be as close as possible to the fuel oil combustion machinery and downstream of the in use fuel oil service tank. (Refer to MEPC.1/Circ864/Rev.1).

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

On board sample is sample taken from a fuel oil tank.

Ship implementation plan:

The Administration should encourage ships flying their flag to develop ship implementation plan, (SIP) outlining how the ship may prepare in order to comply with the required Sulphur content limit of 0.50% by 1 Jan. 2020. The plan could be complemented with a record of actions taken by the ships in order to be compliant by the applicable date.

A ship implementation plan is not a mandatory requirement. A lack of a ship implementation plan or an incomplete ship implementation plan should not be considered as "clear ground" for a more detailed inspection. (MEPC.1 Circ.878-introduction-paragraph 4).

The ship implementation plan could cover various items relevant for the specific ship, including, as appropriate, but not limited to:

- .1 risk assessment and mitigation plan (impact of new fuels);
- .2 fuel oil system modifications and tank cleaning (if needed);
- .3 fuel oil capacity and segregation capability;
- .4 procurement of compliant fuel;
- .5 fuel oil changeover plan (conventional residual fuel oils to 0.50% Sulphur compliant fuel oil); and
- .6 documentation and reporting.

High viscosity high Sulphur fuel oil tend to adhere to the inside of fuel tanks forming layers of semi-solid substances containing sediments and asphaltenic sludge; such residues will also typically have solidified and settled in various parts of the fuel oil service system including pipelines, settling and service tanks.

Although tank cleaning and flushing of pipe lines is not mandatory and dilution of remaining residue by using compliant fuel oil is permitted (MEPC.1 Circ.881 paragraph 4) but it is remained the ship owner's responsibility to be in compliance with the Sulphur limit regulation of in use and onboard fuel oil sample.(expected to be entered into force Sept.2021)

The MEPC.1/Circ.878 provides format of SIP and also practical guidance for tank cleaning.

PSCO measurement:

The PSCO should conduct initial inspection based on:

- 1- Documents and other possible materials, including IAPP Certificate and its supplement – BDN Oil Record Book part 1, contain record of bunkering operation – the written procedures and record of changeover of fuel oil when entering ECAs – any notification in respect of Reg.18.2 of Annex VI- and any record of test of fuel oil in accordance with Appendix VI.
- 2- Remote sensing and portable devices. Such as "Sniffers" Should be considered as indicative nature and the result should not be regarded as the evidence of non-compliance but may be considered as a clear ground for expanding the inspection.
- 3- When the port State identifies clear ground* of suspected non-compliance of a ship based on initial inspections, the port State proceed a more detailed inspection and may require samples of fuel oils to be analyzed.

The "Clear grounds" and more detailed inspection may include but not limited to:

- Any discrepancy in the mentioned documents in paragraph 1 above, and also evidence, for example by fuel calculators, that the quantity of bunkered compliant fuel oil is inconsistent with the ship's voyage plan.
- The PSCO should check the log book in respect of the volume of low Sulphur fuel oils in each tank as well as the date, time, and position of the ship when any fuel-oil-change-over operation is completed prior to the entry into an Emission Control Area or commenced after exit from such an area according to Reg. VI/14.6.
- The PSCO should confirm that the master or crew are familiar with fuel oil bunkering procedures in connection to the respective bunker delivery notes and onboard records including the Oil Record Book Part 1 (regulation VI/18.5 and VI/14.4) and retained samples as required by regulation VI/18;

The PSCO should use professional judgment to determine whether to detain the ship until any noted deficiencies are corrected or to allow it to sail with certain deficiencies which do not pose an unreasonable threat of harm.

If the Sulphur content of any fuel oil being used or carried for use on board exceeds the applicable limit required by regulation VI/14, the PSCO may detain the ship but should take into account the provisions of regulation VI/18.2.

regulation VI/18.2 reads as follows:

2.1 If a ship is found by a Party not to be in compliance with the standards for compliant fuel oils set forth in this Annex, the competent authority of the Party is entitled to require the ship to:

.1 present a record of the actions taken to attempt to achieve compliance; and

.2 provide evidence that it attempted to purchase compliant fuel oil in accordance with its voyage plan and, if it was not made available where planned, that attempts were made to locate alternative sources for such fuel oil and that despite best efforts to obtain compliant fuel oil, no such fuel oil was made available for purchase.

2.2 The ship should not be required to deviate from its intended voyage or to delay unduly the voyage in order to achieve compliance.

2.3 If a ship provides the information set forth in subparagraph 2.1 of this paragraph, a Party shall take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures.

.2.4 A ship shall notify its Administration and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil.

Sample analysis of fuel oils should not unduly delay the operation, movement or departure of the ship. All possible efforts should be made to avoid a ship being unduly detained or delayed.

Refer to paragraph 4.2.4.4 Res. MEPC.320 (74).

Refer to the above paragraph, if PSCO instruct to sample analyses to be carried out, the ship can depart after in accordance with commercial aspect before obtaining the result of the test.

If non-compliance is established, consistent with regulation 18.2.3 the port State may prevent the ship from sailing until the ship takes any suitable measures to achieve compliance which may include de-bunkering all non-compliant fuel oil. Refer to paragraph 4.2.4.5 Res. MEPC.320 (74).

The Parties (the port and flag States); however, may permit, with the agreement of the destination port authority, a single voyage for bunkering of compliant fuel oil for the ship, the single voyage should be one way and minimum for bunkering, and the ship proceeds directly to the nearest bunkering facility appropriate to the ship. Refer to paragraph 4.2.4.6 Res. MEPC.320 (74).

After purchasing compliant fuel oil from a bunkering facility, the non-compliant fuel oil may be discharged to the port or retained on board, as acceptable to the port State. Port State consideration may include environmental, safety, operational and logistical implications of allowing or disallowing the carriage of non-compliant fuel oil. The carriage of non-compliant fuel oil is subject to any conditions of the port State. (MEPC.1/Circ.881).

If the port State is made aware that a ship is carrying non-compliant fuel oil, which is not for use through an equivalent method under regulation 4 (such as EGCS) or a permit under regulation VI/3.2 (such as an exemption from specific provisions of this Annex for a ship to conduct trials for the development of ship emission reduction and control technologies and engine design programmes), the port State should take action to confirm the fuel is not being used. Action to confirm should include but is not limited to the examination of the oil record book and the record of tank soundings. Where necessary the port State may require tank soundings to be undertaken during the inspection. Where it is determined that the fuel has been used the control action include de-bunkering should be applied. Refer to paragraph 4.2.4.7 Res. MEPC.320 (74).

Other open-sea compliance monitoring tools:

- .1 fuel oil changeover calculator;
- .2 data collection system for fuel oil consumption of ships (resolution MEPC.278(70)); and
- .3 continuous SOX monitoring.

Fuel Oil Non Availability Report:

A **FONAR** including the date and time the vessel first received information in respect of next voyage and evidence outlining the attempts made to obtain compliant fuel oil which also accompanied by best effort to procure compliant fuel oil that include but not limited to investigating alternative source of fuel oil prior to commencing the voyage or en- route, will protect the master and ship-owner against the claim that the compliant fuel oil is not available.

The cost of compliant fuel is not considered to be a valid basis for claiming non-availability of fuel.

FONAR need to be reported to the ship's flag administration and competent authority of port of destination. In order to minimize disruption to commerce and avoid delays, the master/company should submit a **FONAR** as soon as it is determined or becomes aware that it will not be able to procure and use compliant fuel oil. Refer to Appendix Res. MEPC.321 (74) & Refer to Appendix 1. Res. MEPC.320 (74).

Letter of protest:

In the case where the bunker delivery note or the representative sample as required by regulation VI/18 presented to the ship are not in compliance with the relevant requirements (the BDN is set out in appendix V of MARPOL Annex VI), the master or officer in charge of the bunker operation may have documented that through a Notification to the ship's flag Administration with copies to the port authority under whose jurisdiction the ship did not receive the required documentation pursuant to the bunkering operation and to the bunker deliverer. Refer to paragraph 2.1.5 Res. MEPC.321 (74).

In addition, if the BDN shows compliant fuel, but the master has independent test results of the fuel oil sample taken by the ship during the bunkering which indicates non-compliance, the master may have documented that through a Notification to the ship's flag Administration with copies to the competent authority of the relevant port of destination, the Administration under whose jurisdiction the bunker deliverer is located and to the bunker deliverer. Refer to paragraph 2.1.6 Res. MEPC.321 (74).

Global Integrated Shipping Information System (GISIS) module:

Pursuant to regulation 18.9 of MARPOL Annex VI, Parties undertake to ensure that appropriate authorities designated by them maintain a register of local suppliers of fuel oil and also take action as appropriate against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note.

A Party to MARPOL Annex VI is required to take all reasonable steps to promote the availability of fuel oils that comply with MARPOL Annex VI and inform IMO regarding this availability via GISIS – MARPOL Annex VI.

Presently The IMO – GISIS module include information regarding the “fuel oil availability” under Reg. 18.1 And “evidence of non-availability of compliance fuel oil” under Reg.18.2.5 and also “failure of fuel oil suppliers to meet the requirements specified in regulation 14 or 18 of Annex VI” under Reg.18.9.6 which provide useful information for ship owners.

Note for surveyor:

- The Sulphur oxides regulations applies to all ships, whether they are on international voyages, between two or more countries; or domestic voyages, solely within the waters of a Party to the MARPOL Annex, so all sizes of ships will need to use the fuel oil that meets the 0.5% limit from 1 Jan. 2020 .(except where expressly provided otherwise in ANNEX VI)
- The IAPP certificate needs to be re-issue in respect of new format of its supplement according to MEPC 305(73) after 1 March 2020.
- New paragraph 2.3.4 & 2.3.5 will be added to the supplement of IAPP certificate after installation of sampling point(s).
- In respect of sampling point, the number and location of the designated fuel oil sampling point(s) need to be confirmed by surveyor on behalf of the flag state.
- The sampling point must be clearly marked for easy identification and describe in either the piping diagram or other relevant documents. (MEPC.1/Circ.864/Rev.1).
- the sampling point(s) need to be installed in new ships which delivered after Sept.2022 and also in the existing ships no later than the first renewal survey of IAPP certificate after Sept.2022.
- The surveyor should confirm that in accordance with the definition of fuel oil in Reg.2.9 and also in respect of unified interpretation to MARPOL ANNEX VI all fuel oil used for ship's operation including the fuel oil for utilizing in emergency equipment (EMG. Generator – life boat & rescue boat engine) is subject to the Sulphur limit regulation after 1 March 2020.
- **FONAR**: A fuel oil non-availability report is not an exemption. According to regulation 18.2 of MARPOL Annex VI, it is the responsibility of the Party of the destination port, through its competent authority, to scrutinize the information provided and take action, as appropriate.

Note for ship-owner:

- IMO instruments provide a practical guideline for ship board operation in respect of Impact of this new fuel oil on machinery systems and key technical consideration in the MEPC.1/Circ.878 & Res. MEPC .320(74).
- The format of *FONAR* and procedure to record actions which taken in respect of *FONAR*, is provided through APPENDIX 1 of Res.MEPC.320(74) and APPENDIX of Res.MEPC.321(74).
- According to MEPC.1/Circ.881, in case of non-compliant fuel oil found, de bunkering to the port facility or to another ship to be carried as cargo is required. Carriage of this non-compliant fuel oil is depended to the consideration of PSCO.

- ❖ This Technical Information is not referred to the “Equivalents” in accordance with regulation VI/4. A Technical Information in relation to the “Equivalents” (EGCS) is going to be published by Iranian Classification Society.
- ❖ This Technical Information is prepared to provide a quick reference for master/ship owners to be in compliance with Sulphur cap 2020. For more detailed information, it is recommended to consider the IMO instrument as mentioned in below link:
<http://www.imo.org/en/MediaCentre/HotTopics/Documents/Sulphur%202020%20infographic%202%20page.pdf>

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