



## TECHNICAL INFORMATION

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### **Subject : Preparation for 2020 0.50% Sulphur regulation, IMO Reference documents and its contents**

In accordance with regulation 14.1 of MARPOL Annex VI, as of 1st January 2020, sulphur content of fuel oil used on board in all waters around the world shall be less than 0.50%.

Based on the results of the feasibility study on fuel oil availability, IMO, at MEPC 70<sup>th</sup> session, has decided to retain 1 January 2020 as the effective date of implementation for the 0.50% sulphur limit for fuel oil used onboard ships. Since then, several IMO member States and organizations repeatedly requested to review the availability or change of enforcement date, but the enforcement date has not changed, and now we are about six months ahead of 2020.

Korean Register has issued the following technical information in order to help stakeholders understand and comply with regulations.

- [Guide to strengthened global SOx regulation \(EGCS\)](#)
- [Guide to strengthened global SOx regulation \(low sulphur fuel oil\)](#)
- [Guide to strengthened global SOx regulation \(Consolidated version\)](#)
- [EXHAUST GAS CLEANING SYSTEMS - TECHNICAL INFORMATION FOR SHIP OWNERS AND SURVEYORS](#)

Since MEPC 70, IMO has been discussing specific issues to ensure consistent implementation of the regulations, including the revision of the MARPOL Convention, the development of several guidelines and the development of a unified interpretation. In this respect, this technical information is issued in order to explain the results of these discussions including published documents and their respective contents.

As a reference, the entire IMO-issued documents are provided as attached. We would like to recommend that all superintendents and PIC who prepare for the implementation of the regulation review the documents carefully and prepare for the new regulation.

In addition, we inform you about the Sulfur 2020 related link on the IMO homepage so that you can refer to the work, and attach a simple flyer issued by IMO. (Attachment 13)

<http://www.imo.org/en/MediaCentre/HotTopics/Pages/Sulphur-2020.aspx>

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## **[MARPOL Amendments]**

### **1. MARPOL Amendments (Res.MEPC.305(73), Draft amendments to the MARPOL Annex VI)**

#### **(1) Key points**

- 1) Res.MEPC.305(73) : Carriage ban of non-compliant fuel oil and amendment of IAPP certificate
- 2) Draft amendments to the MARPOL Annex VI
  - Definition of sulphur content of fuel oil : as tested in accordance with ISO 8754
  - Definition of samples : MARPOL delivered sample / In-use sample / Onboard sample
  - Test provision of In-use and Onboard sample : sampling and testing is available during inspection
  - Test provision of MARPOL delivered sample : analysis could be done by a party (including PSC)
  - Fuel oil sampling point : fitted or designated required until first IAPP renewal survey after Sep. 2022 (expected date of enforcement)
  - Verification procedure of sulphur contents (Appendix VI) : 100% confidence level for MARPOL delivered sample, 95% confidence level for In-use and Onboard samples, result indicated 2 decimal places, the final result shall be evaluated by the competent authority (Retestable)

#### **(2) Note for Shipowner**

- 1) In case of PSC verification of MARPOL delivered sample, 100% confidence level should be met.
- 2) Clear Marking on site and piping drawing is required after fitted or designated sampling point, and re-approval of drawing is not necessary.
- 3) In-use sample is a sample taken from a fuel oil pipeline, and the sampling point required by the convention is for in-use sample.
- 4) Onboard sample is a sample taken from a fuel oil tank and related guideline will be developed and approved at MEPC 75.

#### **(3) Note for Ship builder**

- 1) For new building vessels, it is necessary to install sampling points from ships delivered after September 2022, so it is necessary to review whether to reflect them at design stage.
- 2) Even ships delivered prior to September 2022 may require sampling points for the convenience of the shipowner, so consultation with shipowners is necessary.
- 3) In case of existing ship, consultation with shipowner related to Sampling Point installation is necessary for review.
- 4) In some cases it may be necessary to install a sampling point for direct sampling from the fuel tank, so a preliminary review is necessary.

#### **(4) Note for Surveyor**

- 1) After March 2020, it is necessary to re-issue the IAPP certificate after marking on the relevant column according to the revised form after confirming whether the ship is loaded with non-compliant fuel oil.
- 2) In the first IAPP Special Survey after September 2022, it is necessary to confirm the fitting or designation of on-board fuel oil sampling points.

**\* Please refer to the attached document (Attachment 1-1 and 1-2, Important parts highlighted)**

## 2. Guidelines For On Board Sampling For Sulphur Verification (MEPC.1/Circ.864-Rev.1)

### (1) Key points

- 1) Confirmation of sampling point is required by the flag State
- 2) Sampling location and additional requirements
  - easily and safely accessible and as close to the fuel oil combustion machinery
  - clearly marked for easy identification and described in the piping diagram, provided with suitable drainage
- 3) Sampling handling
  - the sample bottle should be sealed by the inspector, information included in the label

### (2) Note for Shipowner

- 1) As described in above 1., it is necessary to mark the site and drawings after fitting or designation of sampling points and re-approval of drawings is not necessary.
- 2) When considering sampling point location, considering easy to access, safe and the situation of engine room by each ship so that it can be installed nearest to equipment after service tank.
- 3) Identify items to be recorded on the label attached to the sample bottle after sampling.
- 4) Retaining a sample onboard is an option.

### (3) Note for Ship builder

- 1) Sampling points must be located a position shield from any heated surface or electrical equipment.
- 2) Sampling points need proper equipment to drain to drain tank or other safe location.

### (4) Note for Surveyor

- 1) As described in above 1., in the first IAPP Special Survey after September 2022, it is necessary to confirm the fitting or designation of on-board fuel oil sampling points. (after confirming whether marking of site and piping diagram is done or not)

\* Please refer to the attached document (Attachment 2, Important parts highlighted)

## 3. Notification on early application of the verification procedures (MEPC.1/Circ.882)

### (1) Key points

- 1) The amendments to the Convention described in 1. above are expected to take effect in September 2021 when adopted at MEPC 75 (April 2020). The amendment contains Annex VI, Verification Procedure of sulphur contents for fuel oil sample.
- 2) It is anticipated that the sulfur content will be verified by sampling and analysis of in-use and onboard samples before the amendment to the Convention enters into force. However, considering that there is no standard to be applied before the convention announcement, this circular for early application of the verification procedure has been approved.
- 3) This circular expires on entry into force of the amendments to the convention.

### (2) Note for Shipowner

- 1) The revised verification procedure for fuel sulfur content in Appendix VI of MARPOL Annex VI

is possibly applied from the date of publication of this circular.

- 2) In other words, 100% confidence level for MARPOL delivered sample and 95% confidence level for In-use and Onboard samples could be applied from the date of publication of this circular.

**(3) Note for Ship builder and Surveyor**

- 1) Nothing significant to note

\* Please refer to the attached document (Attachment 3, Important parts highlighted)

#### **4. Unified Interpretations to MARPOL Annex VI (MEPC.1/Circ.795/Rev.4)**

**(1) Key points**

- 1) Unified Interpretation that 0.50% sulphur regulation should apply to emergency equipment
  - In accordance with the definition of fuel oil in Reg.2.9, all fuel oil used for ship's operation is subject to the sulphur limit regulation.
  - With reg.3, it is possible to exceed the emission limit in emergency case (for ship's safety and life saving), but since the operation of the emergency equipment is not only carried out in an emergency but also for the periodical test and operation after repair, sulphur regulation should apply to the emergency equipment.

**(2) Note for Shipowner**

- 1) Sulphur content of the fuel oil used for onboard emergency equipment (emergency generator, lifeboat/rescue boat engine, engine-driven fire pump, etc.) should be checked
  - When sulphur content exceeds 0.50% : Replace required
  - When sulphur content is less than 0.50% : Obtain the evidence(document) that confirms sulphur content
  - When sulphur content cannot be confirmed : Replace or confirm by Lab test (result should be kept onboard)

**(3) Note for Ship builder**

- 1) Nothing significant to note

**(4) Note for Surveyor**

- 1) Explain to ship and shipowner about this interpretation and required confirmation action at the time of survey and/or audit of a ship

\* Please refer to the attached document (section 9) (Attachment 4, Important parts highlighted)

## **[Implementation]**

#### **5. Guidelines for consistent implementation of the 0.50% sulphur limit (Res.MEPC.320(74))**

**(1) Key points**

- 1) SIP : refer to MEPC.1/Circ.878
- 2) Impact on fuel and machinery system : describe distillate fuels, bio diesel, residual fuels, key technical consideration for shipowners, ISO standard for residual fuels, cylinder lubrication, etc.
- 3) Verification issues and control mechanism and actions

- Administration : check BDN and any other document and issue IAPP certificate
  - PSC : remote sensing and portable devices could be used, and may be considered clear ground for expanding the inspection but should not be regarded as the evidence of non-compliance / fuel oil samples could be analysed / in case of non-compliant found, de-bunkering could be required / if compliant fuel oil supply is not available at the port, a single voyage for bunkering compliant fuel oil may be permitted.
  - Fuel supplier : sample and test fuel oils from bunker barges or shore terminal, appropriate corrective measures against non-compliant supplier by designated authorities.
- 4) FONAR : In case of fuel oil non-availability despite of best efforts to acquire compliant fuel oil, FONAR should be reported to the Administration and the competent authority of the port of destination. / FONAR should be submitted as soon as it is determined or becomes aware that compliant fuel oil is not available.
  - 5) Potential safety implications : Identified potential safety implications are listed as an appendix.

**(2) Note for Shipowner**

- 1) Refer to the contents of impact on machinery system and potential safety implications.
- 2) Although PSC initial inspection could use remote sensing and portable devices but it cannot be regarded as the evidence of non-compliance.
- 3) If the PSCO requires sampling, it takes a certain amount of time (at least 10 to 10 days) before the sample analysis results, so that the ship can depart according to the schedule before the result.
- 4) In case of non-compliant found, de-bunkering could be required. The port State should report to the Administration of the ship. The port State may permit, with the agreement of the destination port authority, a single voyage for bunkering of compliant fuel oil for this ship.
- 5) Where necessary the port State may require tank sounding.
- 6) Paragraph 4.3.1 of the guideline describes that designated authorities take a sample and test fuel oils from bunker barges or shore bunker terminals, however it will not be implemented in all States, as it is a voluntary base of each State.
- 7) When reporting FONAR, objective evidences of best efforts to obtain compliant fuel oil should be reported together. Best efforts to procure compliant fuel oil include investigating alternative sources of fuel oil prior to commencing the voyage.

**(3) Note for Ship builder**

- 1) Nothing significant to note

**(4) Note for Surveyor**

- 1) Surveyor must examine the BDN basically and other relevant document, if necessary, for marking on the IAPP Certificate which indicate the carriage ban.

\* Please refer to the attached document (Attachment 5, Important parts highlighted)

## 6. Guidance On The Development Of A Ship Implementation Plan (MEPC.1-Circ.878)

### (1) Key points

- 1) Ship Implementation Plan for preparing 2020 0.50% fuel Sulfur limit
  - Guideline : introducing SIP, clearly stating SIP is non-mandatory, overview of SIP, issues relating to use of sulphur compliant fuel oil(compatibility, changeover, non-availability, crew familiarization)
  - Appendix 1 : form of SIP
  - Appendix 2 : impact on machinery system (additional guidance for development SIP)
  - Appendix 3 : tank cleaning (additional guidance for development SIP)
- 2) Appendix 3 provides examples tank cleaning options such as manual cleaning during dry docking, during service and cleaning tanks in service with specialized additives

### (2) Note for Shipowner

- 1) SIP is not a mandatory requirement and approval is not necessary. As the paragraph 4 of the guidelines explains, a lack of a SIP or an incomplete SIP should not be considered as "clear ground" for a more detailed inspection.
- 2) Shipowners who intend to develop SIP should follow the form in Appendix 1 of the guidelines. It does not matter whether items are added or some contents are changed.
- 3) Please be informed that KR is going to develop SIP sample in order to help shipowners.
- 4) Make a plan and implement a fuel oil tank cleaning plan by referring to appendix 3 of this guidelines.

### (3) Note for Ship builder and Surveyor

- 1) Nothing significant to note

\* Please refer to the attached document (Attachment 6, Important parts highlighted)

## [PSC related]

## 7. Guidelines for PSC under MARPOL Annex VI Chapter 3 (Res.MEPC.321(74))

### (1) Key points

- 1) Initial inspections
    - Document examination, following documents could be checked for SOx compliant
    - IAPP certificate, changeover procedure, BDN, MARPOL delivered sample
  - 2) Measure in case of BDN shows compliance, but the test result indicates non-compliance
    - Notification to the ship's flag Administration and copy to next port, Administration where the bunker received and bunker deliverer
  - 3) On ships equipped with EGCS
    - approved documents(SECC, ETM, OMM, SECP) and monitoring records and EGC record book
- If the initial inspection identifies suspect "clear ground", a detailed inspection will be conducted
- 4) Detailed inspection
    - Confirmation sulphur content on fuel oil by bunker sampling and testing
    - If EGCS installed, checking system functioning, emission ratio, pH, PAH, turbidity





- 3) The use of the non-compliant fuel oil at open sea is completely prohibited.
- 4) Dead oil (non-pumpable oil), contaminated tank wall and pipeline with non-compliant fuel could be flushed with fuel flow with the lowest sulphur fuel, but the confidence in the fulfillment of the regulation is the shipowner's responsibility.

**(3) Note for Ship builder and Surveyor**

- 1) Nothing significant to note

\* Please refer to the attached document (Attachment 8, Important parts highlighted)

## [EGCS related]

### 9. Guidance on ongoing compliance In case of EGCS malfunction (MEPC.1/Circ.883)

**(1) Key points**

- 1) Short term temporary emission exceedance and sensor failure is not a EGCS malfunction
- 2) Any EGCS malfunction that lasts more than one hour or repetitive malfunctions should be reported to the flag and port State
- 3) If the EGCS cannot be put back into a compliant condition within one hour, the ship should then change over to compliant fuel oil. If the ship does not have compliant fuel oil or sufficient amount of compliant fuel oil, a proposed course of action should be communicated to relevant authorities including ship's Administration.
- 4) If a malfunction occurs in the instrumentation for the monitoring of Emission Ratio or discharge water, the ship should keep records of interim indication for demonstrating compliance.

**(2) Note for Shipowner**

- 1) Any EGCS malfunction that lasts more than one hour must be reported to the flag State and the port State, and it is necessary to follow the instructions provided by the port State.
- 2) If the ship does not have any compliant fuel oil, a proposed course of action should be communicated to port State and flag State. In this case, it would be possible to navigate with high sulphur fuel oil by referring to reg.18.2 of MARPOL Annex VI which states that "the ship should not be required to deviate its voyage or to unduly delay" because the ship is only available to continue operating with high sulphur fuel oil. However, please keep in mind that approaches could be vary by each port State.

**(3) Note for Ship builder**

- 1) ETM should include trouble shooting, check this with EGCS maker.

**(4) Note for Surveyor**

- 1) ETM should include trouble shooting, therefore this should be checked during approval stage.

\* Please refer to the attached document (Attachment 9, Important parts highlighted)

## [Guidance on best practice]

- 10. **Guidance On Best Practice For Fuel Oil Purchasers/Users (MEPC.1/Circ.875)**
  - Guidance On Best Practice For Fuel Oil Suppliers (MEPC.1/Circ.875/Add.1)**
  - Guidance For Best Practice For Member State/Coastal State (MEPC.1/Circ.884)**
  - MSC-MEPC circular on delivery of compliant fuel oil (Draft)**

### (1) Key points

- 1) Guidance On Best Practice For Fuel Oil Purchasers/Users
  - The fuel oil purchaser should ensure that the fuel oil ordered is correctly specified and could refer to ISO procedure for transfer of bunkers, Singapore specification for quality management, Singapore bunkering code and industry best practice guidance by CIMAC\*.
  - \* International Council on Combustion Engines
  - Refer to questions to help fuel oil purchaser to identify quality oriented fuel oil suppliers
  - Refer to bunker specification and requirements for bunkering procedures which should be stated in the contract
  - EGCS installation should be communicated to the supplier.
- 2) Guidance On Best Practice For Fuel Oil Suppliers
  - The final blending should always be tested and the results should be documented.
  - The supplier should provide representative sample, BDN and SDS(Safety Data Sheet) to ships.
  - Blending should only take place in shore tanks in order to ensure the end product is homogeneous.
  - To ensure the end product is stable, the producer should ensure that all blend components are mutually compatible.
  - It is recommended to maintain a quality management system for quality control in the supply chain.
  - Refer to caution points in bunker transport, storage and transfer. Sampling and testing should be carried out and documented at each point of product custody transfer throughout the supply chain.
- 3) Guidance For Best Practice For Member State/Coastal State
  - Member States/coastal States should strive to follow the procedure for reporting compliant fuel oil non-availability
  - In case bunker delivered found not compliance, the port State/coastal State should take action against the supplier.
  - Quality management system, standard BDN format in accordance with MARPOL could be confirmed when local suppliers of fuel oil register.
  - Member States or other relevant authorities desiring to establish or promote a licensing scheme for bunker suppliers.
- 4) MSC-MEPC circular on delivery of compliant fuel oil
  - A party is required to take all reasonable steps to promote the availability of fuel oils that comply with MARPOL Annex VI. A party takes action as appropriate against fuel oil suppliers that have been found deliver non-compliant fuel oil.
  - For this purpose, above guidance on best practices could be taken into account.

### (2) Note for Shipowner

- 1) These best practice guidances are not compulsory but are based on best practices.
- 2) Efforts should be made to ensure high quality fuel oil by referring to the above guidances.

**(3) Note for Ship builder and Surveyor**

- 1) Nothing significant to note

**(4) Note for fuel oil suppliers**

- 1) Fuel oil suppliers should make efforts to supply high quality fuel oil by referring to the best practice guidance for fuel oil suppliers.

\* Please refer to the attached document (Attachment 10, 10-1, 10-2 and 10-3, Important parts highlighted)

## **[Others]**

### **11. Reporting Of Availability Of Compliant Fuel Oils (MEPC.1/Circ.880)**

**(1) Key points**

- 1) Reg.18.1 of MARPOL Annex VI states that parties should take all reasonable steps to promote the availability of fuel oils that comply with MARPOL Annex VI and inform IMO the availability of compliant fuel oils in its ports and terminals.
- 2) This circular is approved to encourage reporting the availability to IMO GISIS\*  
\* Global Information Shipping Information System
- 3) Parties are encouraged to inform IMO of the availability of compliant fuel oils in its ports and terminals via GISIS MARPOL Annex VI module well in advance of 1 Jan. 2020.

**(2) Note for Shipowner, Ship builder and Surveyor**

- 1) Nothing significant to note

\* Please refer to the attached document (Attachment 11, Important parts highlighted)

### **12. Reporting Of Data to Fuel Oil Availability And Quality In GISIS ( MEPC.1/Circ.887)**

**(1) Key points**

- 1) This is for collection of data related to the availability and quality of fuel oil compliant with the 0.50% m/m sulphur limit and its analysis.
- 2) Member governments are urged to submit relevant data to IMO GISIS database as called for by regulation 18 of MARPOL Annex VI for a full understanding of the effectiveness and impact.
- 3) Member governments are invited to enter data on a voluntary basis relating to fuel oil quality parameters, while ensuring the accuracy of the third-party data.

**(2) Note for Shipowner**

- 1) Voluntary data collection will be implemented based on this circular. In addition, at MEPC 74, a correspondence group has been established and details will be discussed including data utilization.

**(3) Note for Ship builder and Surveyor**

- 1) Nothing significant to note

\* Please refer to the attached document (Attachment 12, Important parts highlighted)

- \* Attachment
- 1-1. Amendments to MARPOL Annex VI (Res.MEPC.305(73))
  - 1-2. Draft amendments to the MARPOL Annex VI
  2. Guidelines For On Board Sampling For Sulphur Verification (MEPC.1/Circ.864-Rev.1)
  3. Notification on early application of the verification procedures (MEPC.1/Circ.882)
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  - 10-2. Guidance For Best Practice For Member State/Coastal State (MEPC.1/Circ.884)
  - 10-3. MSC-MEPC circular on delivery of compliant fuel oil (Draft)
  11. Reporting Of Availability Of Compliant Fuel Oils (MEPC.1/Circ.880)
  12. Reporting Of Data to Fuel Oil Availability And Quality In GISIS ( MEPC.1/Circ.887)
  13. IMO Sulphur 2020 flyer

Distributions : KR surveyors, Ship owners, Ship builders, Other relevant parties

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