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## COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
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To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
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Subject:	COMMISSION STAFF WORKING DOCUMENT For the Council Shipping Working party IMO – Union submission to be submitted to the 5th session of the Sub-Committee on Pollution Prevention and Response (PPR 5) of the IMO in London from 5 - 9 February 2018 concerning proposals for the consistent implementation of regulation 14.1.3 of MARPOL Annex VI

Delegations will find attached document SWD(2017) 379 final.

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**COMMISSION STAFF WORKING DOCUMENT**

**For the Council Shipping Working party**

**IMO – Union submission to be submitted to the 5th session of the Sub-Committee on Pollution Prevention and Response (PPR 5) of the IMO in London from 5 - 9 February 2018 concerning proposals for the consistent implementation of regulation 14.1.3 of MARPOL Annex VI**

**COMMISSION STAFF WORKING DOCUMENT**  
**For the Council Shipping Working party**

**IMO – Union submission to be submitted to the 5th session of the Sub-Committee on Pollution Prevention and Response (PPR 5) of the IMO in London from 5 – 9 February 2018 concerning proposals for the consistent implementation of regulation 14.1.3 of MARPOL Annex VI**

**PURPOSE**

The document in Annex contains a draft Union submission to the 5th session of the Sub-Committee on Pollution Prevention and Response (PPR 5) of the IMO concerning proposals for the consistent implementation of regulation 14.1.3 of MARPOL Annex VI. It is hereby submitted to the appropriate technical body of the Council with a view to achieving agreement on transmission of the document to the IMO prior to the required deadline of 1 December 2017<sup>1</sup>.

MARPOL Annex VI requirements, with regard to limitation of SO<sub>x</sub> emissions, are implemented in EU law in Directive (EU) 2016/802 of the European Parliament and of the Council of 11 May 2016 relating to a reduction in the sulphur content of certain liquid fuels<sup>2</sup>.

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<sup>1</sup> The submission of proposals or information papers to the IMO, on issues falling under external exclusive EU competence, are acts of external representation. Such submissions are to be made by an EU actor who can represent the Union externally under the Treaty, which for non-CFSP (Common Foreign and Security Policy) issues is the Commission or the EU Delegation in accordance with Article 17(1) TEU and Article 221 TFEU. IMO internal rules make such an arrangement absolutely possible as regards existing agenda and work programme items. This way of proceeding is in line with the General Arrangements for EU statements in multilateral organisations endorsed by COREPER on 24 October 2011.

<sup>2</sup> OJ L 132, 21.5.2016, p. 58.

## PREVENTION OF AIR POLLUTION FROM SHIPS

### Proposals for the consistent implementation of regulation 14.1.3 of MARPOL Annex VI

Submitted by the European Commission on behalf of the European Union

#### SUMMARY

<i>Executive summary:</i>	This document provides input to agenda item 13 on the consistent implementation of regulation 14.1.3 of MARPOL Annex VI. It builds up on the experience on control and enforcement of the low sulphur regulations in European Sulphur Oxides Emission Control Areas.
<i>Strategic direction:</i>	7.3
<i>High-level action:</i>	7.3.1
<i>Output:</i>	No related provisions (trigger discussion on related provision)
<i>Action to be taken:</i>	Paragraph 32
<i>Related documents:</i>	MEPC 71/17, PPR 4/21 (annex 13), MEPC 71/5/9, MEPC 70/5/2, MEPC 70/INF.41, MEPC 71/9/5, PPR 4/20/2

#### Introduction

1 This document is submitted in accordance with the provisions of paragraph 6.12.4 of the *Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.4/Rev.4) and provides input to items 1, 3 and 7 of the scope of work to be conducted under the agenda item regarding the consistent implementation of regulation 14.1.3 of MARPOL Annex VI.

#### Background

2 During MEPC 70, the Committee agreed that the effective date of implementation of the fuel oil standard in regulation 14.1.3 of MARPOL Annex VI should be 1 January 2020. At MEPC 71, the Committee further approved the new output on "Consistent implementation of regulation

14.1.3 of MARPOL Annex VI”, for inclusion in the PPR Sub-Committee’s biennial agenda for 2018/2019 and the provisional agenda for PPR5, with a target completion year of 2019.

3 The EU Member States have started to work on core items of PPR new output and also preliminary discussed with industry the proposals submitted in this document, under the European Sustainable Shipping Forum<sup>3</sup>.

4 The sulphur content of certain liquid fuels including marine fuels used by ships operating in waters falling under the jurisdiction of EU Member States is regulated through Directive (EU) 2016/802. The main Directive's provisions require stricter sulphur-in-fuel content: 0.10 % on all ships operating in Sulphur Oxides Emission Control Areas ((SOx)-ECAs in European waters, since January 2015) and on ships at berth (since January 2010); 0.50 % on all ships operating outside the EU (SOx)-ECAs as from 1 January 2020 as in regulation 14.1.3 of MARPOL Annex VI.

5 This document provides information on enforcement best practices based on the experience that the EU has gained in the implementation of the low sulphur regulations and includes a set forward looking proposals and short term recommendations based on currently applied methods for consideration by the Sub-Committee in order to ensure a robust and consistent implementation of regulation 14.1.3 of MARPOL Annex VI.

### **Enforcement best practices**

6 **Port State Control Inspections (sulphur related)**<sup>4</sup> are based on the provisions on port state control (PSC) inspection procedures in MARPOL Annex VI with regard to foreign ships visiting the ports of a Party (Articles 5 and 6 of the Convention and regulations 10 and 11 of Annex VI). Specific PSC inspection guidelines exist for Parties under MARPOL Annex VI (IMO Res. MEPC 181(59)) including the sulphur regulations. Initial inspections, in respect of the sulphur regulations, are limited to checking IAPP certificate and the bunker delivery note (BDN) thus are not providing an in-depth understanding of the compliance with the requirements. A more detailed inspection, including check of fuel oil change-over procedure and various ships’ logbooks, can be conducted if there are ‘clear grounds’ which are given in MEPC.181(59), paragraph 2.1.7.

7 PSC is a well-developed and harmonized system, including requirements for the training and qualification of the inspectors, which should be made suitable for undertaking verifications in relation to the global sulphur regulations in 2020. In some ports of EU Parties to MARPOL Annex VI, more detailed inspections already take place based on clear grounds beyond those included in the related PSC guidelines (i.e. risk factors established prior boarding

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<sup>3</sup>The European Sustainable Shipping Forum is an expert group of the European Commission, bringing together 28 EU Member States and 32 maritime organisations. The forum aims at enabling, inter alia, a structured dialogue on the monitoring of compliance with the sulphur regulations with focus on the consistent implementation of the 0.50% sulphur cap, creating the framework conditions for the use of liquefied natural gas (LNG) as a ship fuel, the increasing use of EGCS technology in shipping, in particular its technical, economic, environmental and operational aspects, coordinating research and development activities and encouraging innovation, exploring all available financing opportunities, ensuring compatibility with the EU’s broader environmental protection objectives, and on identifying potential improvements in sustainability and competitiveness.

<sup>4</sup>In some countries sulphur controls are performed separately from regular PSC. Under PSC, inspectors will look to all documentation (not only sulphur related) for all applicable IMO/ILO Conventions. Dedicated sulphur controls might be more focused including a more thorough review of the documents on board including fuel change-over records, records of navigational activities, tank plans, oil record book etc. to ascertain compliance.

the ship based on “sniffer” or portable devices measurements). Each inspection requires an average of 4-5 hours for the complete inspection (including sulphur).

8 It could be useful to revise the related PSC guidelines by 2020 including what can be considered as clear grounds for a more detailed inspection regarding the sulphur regulations. For example, targeting tools such as "sniffer" (section 22-24) or portable devices (section 16-17) sulphur measurements indicating non-compliance could be considered as clear grounds for inspection.

9 **On board sampling of fuel used** from the ship fuel oil service system occurs, either on a voluntary basis or based on national/regional regulation. It is a robust, necessary and efficient way to enforce the requirements for the sulphur content of the fuel oil used on board ships. Specific guidelines exist for Parties to MARPOL in relation to onboard sampling for the verification of the sulphur content of fuel oil used on board ships (MEPC.1/Circ.864). A number of Parties conduct sampling on a spot-check basis or take fuel samples only as a part of a detailed inspection. Fuel sampling is typically combined with other enforcement practices (i.e. PSC, document verifications) or it may be triggered by information on possible non-compliance from dedicated targeting tools.

10 In the EU, the average cost for fuel sampling ranges between 50 and 200 € (60-367 \$) per sample including the sampling equipment and laboratory analysis. The drawing process on board the ship requires 1-2 hours, including identification of the proper sampling point, taking the sample, sealing, documenting etc.). Transportation to laboratory and analysis is not included. The analysis typically takes a couple of hours but the transport may take several days depending on the distance from the ship to the laboratory.

11 Several Parties to MARPOL Annex VI have extensive experience with this approach (more than 5,000 fuel oil samples have been drawn and analysed in order to verify compliance in the EU) which has effectively led the way to impose penalties. A drawback is that the system does not provide complete information on the fuel used prior to arrival in port.

12 The proposal on a harmonized and dedicated sampling position is supported in order to avoid disputes on sampling position, as proposed in document MEPC 71/5/9 approved for consideration by PPR 5 under its agenda. Further, it is recommended that sampling of fuel oil in use in accordance with MEPC.1/Circ.864 should be considered by 2020 as a part of a more detailed PSC inspection thus referred to in related Guidelines under MARPOL Annex VI (IMO Res. MEPC 181(59)).

13 **Analysis of the MARPOL sample** as the representative sample of the fuel oil for combustion purposes delivered for use on board ships takes place in accordance to MARPOL Annex VI Regulation 18. Specific guidelines exist on how to obtain such representative sample in IMO Resolution MEPC.182 (59)). This method is relevant only to verify if the ship bunkered fuel which is compliant to the MARPOL regulations and corresponds to the information on the BDN.

14 The Convention refers to “an Administration” (as opposed to the usual term “the Administration”) that can potentially require the representative sample to be analysed in accordance with the verification procedure set forth in appendix VI to Annex VI. This procedure is, however, not widely applied in practice. The fact that the Convention refers to “an

Administration” has led to a lack of clarity if a port State authority (or only the flag State) can require the MARPOL sample to be analysed without consent from the flag State. This could be relevant in cases where PSC has reasons to believe that the BDN is not representative of the fuel oil delivered to the ship from January 2020, or in cases of potential fuel contamination between two fuel grades.

15 It is necessary to clarify that port States can require a MARPOL sample to be analysed under given circumstances, i.e. if there is evidence or indications of fuel oil supplier delivering non-compliant fuel. This could be formalised through an MEPC circular.

16 **Portable devices for on board sulphur-in-fuel analysis** may occur as a supplement to the on board sampling of fuel oil (see section 9 to 11). The method provides a quick indication whether the fuel oil is likely to comply with the MARPOL regulations or not. If the results suggest non-compliance, the fuel oil sample is normally submitted to an accredited laboratory in order to conduct a thorough analysis. EU Experience shows the average cost per portable device to be around 25,000 - 40,000 € (~47,000 \$). Current portable devices measurements are not yet in accordance with ISO 8754 sulphur test.

17 If fuel samples are taken according to a regional/local regulation or on a voluntary basis, the method could be used as "clear grounds" for a more detailed PSC inspection if the result is above the mandatory threshold. The use of portable devices for their time and costs saving potential is recommended, but it is stressed that further documentation on the alignment of the reliability with ISO 8754 would need to be produced.

18 **On board emission continuous monitoring** systems for ship SO<sub>x</sub>-emissions are already required for ships fitted with an Exhaust Gas Cleaning Systems (EGCSs) approved according to scheme B. The exhaust gas quality in terms of SO<sub>2</sub> (ppm)/CO<sub>2</sub> (%) ratio is used as the basis for determining compliance with regulation 14 of MARPOL Annex VI. The cost for a system compliant with the requirements of the EGCS guidelines range from 40,000 – 100,000 € including gas sensor and data handling system, but excluding installation.

19 On-board emission monitoring may constitute a useful and cost-efficient way to confirm compliance. It is suitable to verify compliance with the global sulphur regulations in 2020. Experience from the use of such systems on ships with scrubbers is diverse. There are a number of systems on the market that are reported to be robust and work perfectly as long as the maintenance schedule is followed. Other systems, however, seem to experience frequent problems requiring that ships replace sensors frequently. Further, some systems could potentially be subject to tampering. Experience from other sectors should be able to provide proper solutions to minimize the risk of tampering. Training of crew and inspectors are necessary (to read and interpret the data). It is likely that cheaper, more reliable and tamper proof systems requiring less maintenance and based on improved technology will be available in the future, as demand increases. For the above reasons considering their use is recommended.

20 **Fuel Calculator** types of tools are used to check compliance over an entire voyage/leg. They allow the calculation of the theoretical minimum fuel consumption on board a ship which is then compared with estimates based on the documents presented by the crew. In this process, various documentation and data might be cross checked and inserted into the tool including from BDN, navigation information from bridge's log books, engine data from the ship's



statutory documents or engine room log book, oil record book, fuel change over records, fuel tanks capacity and content, etc. The tool allows to check whether the vessel used low sulphur fuel oil in the (SOx)-ECA, changed over from high to low sulphur fuel oil before entering the (SOx)-ECA or there is enough fuel in compliance with MARPOL Annex VI regulation 14 to reach the next destination in or outside the (SOx)-ECA.

21 The tool relies on the robustness of BDNs and log books. Further, fuel oil consumption depends on the ships' maintenance condition. The collection of data might be rather time consuming which can be a challenge if combined with routine PSC inspections. However, for trained personnel, the necessary data can be obtained in an hour. Verifying official data as logs of fuel on board (oil record books/BDN's) as part of PSC is important to keep quality and consistency of these records thus allowing reliable reconstructions of used fuel i.e. over meaningful periods of time before the port call. Such detailed inspection of documents as a part of Port State inspection may need "clear grounds". While there is not yet extensive experience in using the tool to sustain penalties alone or in combination with other prima facie evidence, fuel calculators are however robust and cost efficient tools to standardise compliance check over an entire voyage/leg. Their use would greatly facilitate the 0.50% compliance checks and hence, should be encouraged.

22 **Remote sensing** surveillance of SOx emissions from ships while the ships are in trade is possible with innovative monitoring technologies that aims at externally determining the sulphur content of the fuel used by a ship using "sniffer" instruments (gas analysers). The SO<sub>2</sub>/CO<sub>2</sub> ratio in the exhaust plume is measured through which the corresponding sulphur content in the fuel oil used by the ship is calculated. Sniffers need to be directed and exposed to the ships' exhaust plume and thus the sniffing instruments need to be within a certain distance from the ship (depending on equipment type) and also relies on meteorological conditions (wind) to enable the detection of individual exhaust plumes. Sniffer measurements are combined with information about the identity of the ship from the AIS system (IMO number, name, flag state and next port of call) together with information about the measuring system and location of measurement from GPS. Sniffers can be placed on fixed positions (bridges or port entrances) or be mounted on a mobile platform like small aircrafts, helicopters, boats and remotely piloted aircraft systems (RPAS), also known as drones. In most countries, the use of RPAS is, however, limited by the fact that RPAS can only be operated within visual line of sight due to aviation regulations.

23 Some Parties to MARPOL Annex VI have experience with the use of both fixed and mobile sniffers in (SOx)-ECA<sup>5</sup>. While there is good correlation between sniffer measurements and fuel analysis results no standard exists yet for remote measurements and the uncertainty is still higher than for fuel analysis. The method is therefore applied only to target ships and trigger a more detailed inspection (e.g. checking oil record books, change-over procedures and/or taking of a fuel sample). Costs vary depending on the platform and measurement technology. The method is useful within limited distances from shoreline like port or specific coastal areas. The technologies are still under development and costs are expected to be reduced in the future while the precision and operational range is expected to increase. The use of sniffers should be encouraged for their relevance in monitoring ships en route.

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<sup>5</sup> Detailed information about experience with remote measurement technologies is available at [www.compmon.eu](http://www.compmon.eu)



24 It is also possible to measure SOx emissions from ships using optical sensors equipped on planes, helicopters or drones. At present the technology is, however, more of indicative nature since optical sensors cannot easily measure CO<sub>2</sub>.

25 **Common information systems** may be effectively used to gather and share information on a joint database concerning the results of different enforcement practices by Parties to MARPOL Annex VI.

EU Member states have established the common voluntary database THETIS-EU which has been in operation since January 2015 and now contains more than 24,000 inspections results. The system is used to share alerts on ships (resulting from inspections and from remote sensing equipment), record information about inspections (to avoid unnecessary frequent inspections), update information on new equipment installed on ship applicable to SOx emissions (EAM, emission monitoring equipment or other). Based on such a system, a risk-based targeting system of ships can potentially be developed to also include alerts on possible violation of the 0.50% sulphur cap. Average time needed by duly authorized officers to input information in similar systems is 10 minutes.

26 Global cross-sharing of information or alerts on non-compliances and violation of environmental requirements among different authorities and different PSC MoU regimes involved in emission controls according to MARPOL Annex VI would be very useful and research into the possibilities for a global exchange of such information should be encouraged. While not a direct enforcement method, data recording and exchanges between different authorities should be encouraged as well as the development of a centralised global system for sharing of information. Such system would require maintenance and training of inspectors to ensure data are kept up-to-date and reliable. There may be a conflict if sulphur inspections are conducted as a part of PSC since the MoUs often contain their own mandatory requirements for targeting and selection of ships for inspection which may not incorporate any sulphur related ship alerts. Such global system should be linked and capitalize on already existing IMO databases such as to the IMO Ship Fuel Consumption Database adopted by IMO Resolution MEPC.278(70) or IMO GISIS database and could also serve the purpose of a register for fuel unavailability reports as a follow up to the PPR work scope under item 4 developing their draft standard formats.

27 **Publication of information on non-compliant ships/companies** or Reporting scheme to IMO to be registered on centralized information platforms are proposed as elements of an effective enforcement strategy. Various PSC regimes have successfully used the publishing of information related to substandard ships and companies as a deterrent to non-compliance. Port States also need to report detentions of vessels to IMO which may affect the future PSC targeting of the ship. The IMO GISIS database already makes available certain information related to non-compliances with the MARPOL Annex VI regulations.

28 Publication of information on non-compliant ships/companies could be an effective preventive method to support compliance with the global sulphur regulations in 2020. It would require, however, ensuring that any information published is accurate. In order to avoid inconsistency, strict criteria should be defined and list of instances of non-compliance determined specifying which are the cases, when information on ship or company should be published. Alternatively, a green listing of well-performing companies could be considered.

## **Recommendations**

29 A consistent, effective and timely implementation of the 0.50% sulphur limit is critical to achieve the environmental benefits sought through regulation 14 of MARPOL Annex VI and to address commercial issues. The following preparation steps are proposed with the recommendation to prioritise discussion on short term measures to avoid delaying the implementation of the 0.50% requirement:

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- Revision of the MARPOL Annex VI PSC guidelines to include on board fuel sampling, at a later stage, from harmonized and dedicated sampling positions to avoid disputes and ensure sample representativeness,
- Issuing a Circular to clarify Port State's possibility to analyse MARPOL samples,
- Consider how targeting measurements from remote sensing or portable devices could be taken into account during Port State Control inspections,
- Consider use of other enforcement practices dedicated to open-sea compliance monitoring such as "fuel calculator" tools and on board emission continuous monitoring systems,
- Consider how information related to non-compliances under MARPOL Annex VI regulations can be shared most efficiently between Parties, for example through the IMO GISIS database.

## **Action requested by the Sub-Committee**

30 The Sub-Committee is invited to note the information provided and consider the potential actions suggested in section 29 above in order to support the consistent implementation of regulation 14.1.3 of MARPOL Annex VI.