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**REPORT OF THE MARINE ENVIRONMENT PROTECTION COMMITTEE
ON ITS SEVENTY-FOURTH SESSION**

Attached are annexes 1 to 3, 5, 6, and 9 to 27 to the report of the Marine Environment Protection Committee on its seventy-fourth session (MEPC 74/18).

(See document MEPC 74/18/Add.2 for annexes 4, 7 and 8)

LIST OF ANNEXES

ANNEX 1	RESOLUTION MEPC.312(74) – GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL
ANNEX 2	RESOLUTION MEPC.313(74) – AMENDMENTS TO THE 2017 GUIDELINES ADDRESSING ADDITIONAL ASPECTS OF THE NO _x TECHNICAL CODE 2008 WITH REGARD TO PARTICULAR REQUIREMENTS RELATED TO MARINE DIESEL ENGINES FITTED WITH SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEMS (RESOLUTION MEPC.291(71))
ANNEX 3	RESOLUTION MEPC.314(74) – AMENDMENTS TO THE ANNEX OF THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO
ANNEX 5	RESOLUTION MEPC.316(74) – 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
ANNEX 6	RESOLUTION MEPC.317(74) – AMENDMENTS TO THE NO _x TECHNICAL CODE 2008 (ELECTRONIC RECORD BOOKS AND CERTIFICATION REQUIREMENTS FOR SCR SYSTEMS)
ANNEX 9	UPDATED UNIFIED INTERPRETATION OF APPENDIX I (FORM OF THE INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE) OF THE BWM CONVENTION
ANNEX 10	DRAFT AMENDMENTS TO THE BWM CONVENTION (REGULATION E-1 AND APPENDIX I)
ANNEX 11	DRAFT MSC-MEPC CIRCULAR ON DELIVERY OF COMPLIANT FUEL OIL BY SUPPLIERS
ANNEX 12	UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI (REGULATIONS 13.2.2, 13.5.3, 14.1 AND 16.9)
ANNEX 13	DRAFT AMENDMENTS TO MARPOL ANNEX VI (REGULATIONS 1, 2, 14, 18, 20, 21, APPENDIX I AND APPENDIX VI)
ANNEX 14	RESOLUTION MEPC.320(74) – 2019 GUIDELINES FOR CONSISTENT IMPLEMENTATION OF THE 0.50% SULPHUR LIMIT UNDER MARPOL ANNEX VI
ANNEX 15	RESOLUTION MEPC.321(74) – 2019 GUIDELINES FOR PORT STATE CONTROL UNDER MARPOL ANNEX VI CHAPTER 3

ANNEX 16	RESOLUTION MEPC.322(74) – AMENDMENTS TO THE 2018 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS (RESOLUTION MEPC.308(73))
ANNEX 17	TERMS OF REFERENCE FOR THE ESTABLISHMENT OF A VOLUNTARY MULTI-DONOR TRUST FUND TO SUSTAIN THE ORGANIZATION'S TECHNICAL COOPERATION AND CAPACITY-BUILDING ACTIVITIES TO SUPPORT THE IMPLEMENTATION OF THE INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS ("GHG TC-TRUST FUND")
ANNEX 18	TERMS OF REFERENCE OF THE FOURTH IMO GHG STUDY
ANNEX 19	RESOLUTION MEPC.323(74) – INVITATION TO MEMBER STATES TO ENCOURAGE VOLUNTARY COOPERATION BETWEEN THE PORT AND SHIPPING SECTORS TO CONTRIBUTE TO REDUCING GHG EMISSIONS FROM SHIPS
ANNEX 20	TERMS OF REFERENCE FOR THE IMO STUDY ON MARINE PLASTIC LITTER FROM SHIPS
ANNEX 21	SCOPE OF WORK OF THE PPR, III AND HTW SUB-COMMITTEES IN RELATION TO MARINE PLASTIC LITTER FROM SHIPS
ANNEX 22	BIENNIAL AGENDA OF THE PPR SUB-COMMITTEE FOR THE 2020-2021 BIENNIUM
ANNEX 23	PROVISIONAL AGENDA FOR PPR 7
ANNEX 24	STATUS REPORT OF THE OUTPUTS OF MEPC FOR THE 2018-2019 BIENNIUM
ANNEX 25	PROPOSED OUTPUTS OF MEPC FOR THE 2020-2021 BIENNIUM
ANNEX 26	ITEMS TO BE INCLUDED IN THE AGENDAS OF MEPC 75 AND MEPC 76
ANNEX 27	STATEMENTS BY DELEGATIONS AND OBSERVERS

ANNEX 1**RESOLUTION MEPC.312(74)
(adopted on 17 May 2019)****GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL**

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,

NOTING resolutions MEPC.314(74), MEPC.316(74) and MEPC.317(74), by which it adopted amendments to MARPOL Annexes I, II, V and VI and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_x Technical Code 2008), respectively, to enable the use of electronic record books,

RECOGNIZING the need to develop guidance for the use of electronic record books,

HAVING CONSIDERED, at its seventy-fourth session, the draft Guidelines for the use of electronic record books under MARPOL, prepared by the Sub-Committee on Pollution Prevention and Response, at its fifth session,

1 ADOPTS the *Guidelines for the use of electronic record books under MARPOL*, the text of which is set out in the annex to this resolution;

2 INVITES Governments to apply the Guidelines as soon as possible, or when the above-mentioned amendments to MARPOL Annexes I, II, V and VI and the NO_x Technical Code 2008 enter into force;

3 AGREES to keep the Guidelines under review in light of experience gained.

ANNEX

GUIDELINES FOR THE USE OF ELECTRONIC RECORD BOOKS UNDER MARPOL

1 INTRODUCTION

1.1 A key element of the International Convention for the Prevention of Pollution from Ships (MARPOL) regulations is the recording of discharges associated with the prevention of pollution from ships. A number of MARPOL Annexes require the recording of particular discharges.

1.2 The format for the recording of discharges under MARPOL is provided in the appendixes to the relevant MARPOL Annexes. Traditionally, the format of these record books has been provided in hard copy by the Administration. However, as companies and shipowners increasingly focus on ways to operate in an environmentally responsible manner and aim to reduce the heavy burden associated with paperwork through electronic means, the concept of operational logs in an electronic format has become a popular consideration.

1.3 It is considered that this approach to recording and reporting should be encouraged as it may have many benefits for the retention of records by companies, crew and officers.

1.4 It is expected that as companies and shipowners increasingly explore electronic record keeping, flag State Administrations will be requested to approve electronic recording systems (henceforth referred to as an electronic record book). This guidance aims to provide standardized information on approving an electronic record book to ensure the obligations of MARPOL are met and that there is a consistent approach to approving such systems.

2 APPLICATION

2.1 These Guidelines are only applicable to the use of electronic record books on board to meet the requirements of the following record books and recording requirements under the MARPOL Annexes and the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_x Technical Code):

- .1 Oil Record Book, parts I and II (MARPOL Annex I, regulations 17.1 and 36.1);
- .2 Cargo Record Book (MARPOL Annex II, regulation 15.1);
- .3 Garbage Record Book, parts I and II (MARPOL Annex V, regulation 10.3);
- .4 Ozone-depleting Substances Record Book (MARPOL Annex VI, regulation 12.6);
- .5 recording of the tier and on/off status of marine diesel engines (MARPOL Annex VI, regulation 13.5.3);
- .6 Record of Fuel Oil Changeover (MARPOL Annex VI, regulation 14.6); and
- .7 Record Book of Engine Parameters (NO_x Technical Code, paragraph 6.2.2.7).

2.2 The use of an electronic record book to record operational logs is an alternative method to a hard copy record book. The electronic record book may allow ships to utilize their technology to reduce administrative burdens and contribute to on board environmental initiatives, e.g. reduction of paper use.

2.3 These Guidelines do not provide information on the management of electronic access to, or electronic versions of, certificates and other documents that do not log continuous operations of a ship.

2.4 These Guidelines do not address the exchange of information from a ship to a company headquarters or other body, as this exchange is not a requirement of record books under MARPOL.

2.5 If a shipowner decides to use an electronic record book to record operational logs, instead of a hard copy record book, the following guidance should be taken into consideration by the Administration when approving the electronic record book for use.

3 DEFINITIONS

For the purposes of these Guidelines, the following definitions apply to the extent consistent with MARPOL:

- .1 **Administration:** means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration and exploitation of the seabed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned.
- .2 **Audit Logging:** means logs recording user activities, exceptions and information security events, where logs are kept for an agreed period to assist in future investigations and access control monitoring (ISO/IEC 27001:2006). The time and date for the log should be Universal Co-ordinated Time (UTC) derived from ship's time.
- .3 **Backup:** means to make a duplicate copy of a file, program, etc. as a safeguard against loss or corruption of the original. The specific properties of the backup such as its format, frequency, storage location, retention period, are unique to each business organization and should be defined in accordance with a Business Continuity Plan.
- .4 **Business Continuity Plan:** means a collection of procedures and information that is developed, compiled and maintained in readiness for use in the event of an emergency or disaster.
- .5 **Company:** means the Owner of the ship or any other organization or person such as the Manager or the Bareboat Charterer, who has assumed the responsibility for the operation of the ship from the shipowner and who on assuming such responsibility has agreed to take over all the duties and responsibility imposed.
- .6 **Credentials:** means data that is transferred to establish the claimed identity of an entity. (ISO 7498-2). Examples of credentials include a unique code/password, electronic key, digital certificate, hardware key, biometric data (e.g. fingerprint).

- .7 **Cryptography:** means the discipline which embodies principles, means and methods for the transformation of data in order to hide its information content, prevent its undetected modification and/or prevent its unauthorized use (ISO 7498-2).

- .8 **Data:** means a re-interpretable representation of information in a formalized manner suitable for communication, interpretation or processing (ISO/IEC 2382-1).

- .9 **Digital certificate:** means a cryptographic transformation (see "cryptography") of a data unit in an asymmetric (public key) cryptosystem, using a Digital Signature to unite an identity with a public key.

- .10 **Digital signature:** means data appended to, or a cryptographic transformation (see "cryptography") of, a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery e.g. by the recipient (ISO 7498-2).

- .11 **Document:** means books, manuals, plans, instructions and similar media that are not certificates and are used to convey a ship's information.

- .12 **Electronic record book:** means a device or system used to electronically record the entries for discharges, transfers and other operations as required under MARPOL Annexes and the NO_x Technical Code.

- .13 **Functional Unit:** means an entity of hardware, software, or both, capable of accomplishing a specified purpose ISO/IEC 2382-1:1993 Information technology-Vocabulary- Part 1: Fundamental terms, definition 10.01.40.

- .14 **Graphic character:** means a character, other than a *control character*, that has a visual representation and is normally produced by writing, printing or displaying (ISO 2382-4).

- .15 **IEC 60092 (series):** means standards published by the International Electrotechnical Commission (IEC) on Electrical Installations on Ships.

- .16 **IEC 60533:** means standard published by the International Electrotechnical Commission (IEC) on Electrical and Electronic Installations on Ships – Electromagnetic Compatibility.

- .17 **Offline:** means usage #1. Pertaining to the operation of a functional unit when not under the direct control of the system with which it is associated. Offline units are not available for immediate use on demand by the system. Offline units may be independently operated. Usage #2. Pertaining to equipment that is disconnected from a system, is not in operation, and usually has its main power source disconnected or turned off.

- .18 **Portable Document Format (PDF):** means a digital form for representing documents that enables users to exchange and view electronic documents easily and reliably, independent of the environment in which they were created and the environment in which they are viewed or printed (ISO 32000).

- .19 **Port:** means any port, terminal, offshore terminal, ship and repair yard or roadstead which is normally used for the loading, unloading, repair and anchoring of ships, or any other place at which a ship can call.
- .20 **Key:** means a sequence of symbols that controls the operation of encipherment and decipherment (see "cryptography").
- .21 **Private key:** means (in a public key cryptosystem) that key of a user's key pair which is known only by that user (ISO/IEC 9594-8).
- .22 **Public key:** means (in a public key cryptosystem) that key of a user's key pair which is publicly known (ISO/IEC 9594-8).
- .23 **Role Based Access Control (RBAC):** means a control mechanism that provides different access levels to guarantee that individuals and devices can only gain access to and perform operations on network elements, stored information, and information flows for which they are authorized (ISO/IEC 27033-2:2012).
- .24 **Shipowner:** means one who owns or operates a ship, whether a person, a corporation or other legal entity, and any person acting on behalf of the owner or operator.
- .25 **Signature:** means the handwritten means of identifying the signer of a document or an electronic equivalent which is uniquely and securely linked to an individual.
- .26 **Standardized:** means the prescription of an authoritative rule, principle, means of judgement or estimation, criterion, measure of correctness, measure of perfection or some definite degree of any quality that determines what is adequate for a purpose.
- .27 **Storage (device):** means a functional unit into which data can be placed, in which they can be retained, and from which they can be retrieved (ISO/IEC 2382-1:1993 Information technology – Vocabulary – Part 1: #;Fundamental terms).

4 SYSTEM SPECIFICATIONS

4.1 Ability of the electronic record book to meet regulations under MARPOL

4.1.1 The use and output presentation of any electronic record book approved by an Administration should satisfy the requirements of all relevant regulations under MARPOL.

4.1.2 As MARPOL specifies the recording of a range of information for specific circumstances, an approved system should only allow a complete entry to be saved for verification by the master. For example, for a MARPOL Annex V discharge at sea, the entry should not be able to be saved without the entry of the latitude and longitude of the discharge. It is suggested that where possible, technology which can automatically input required data be installed to ensure accuracy. In the case of equipment failure, manual input should be allowed and the change of the source of data recorded. The automatic data value inputs should be protected by measures aimed at preventing attempts at manipulation or falsification. The system should automatically record any attempts to manipulate or falsify any data.

4.1.3 To assist with consistent recording of data such as dates and positions, the system should be developed to display entry fields and request data formats that are as consistent as possible with other electronic reporting required by IMO and other shipboard systems. Electronic record books should be presented in the form as specified in relevant MARPOL Annexes in order to assist the smooth transition from hard copy record books to electronic ones.

4.1.4 In order to comply with MARPOL requirements, an electronic record book should have the capability to retain all records made for the minimum period as specified in each Annex of MARPOL. The capability to produce a hard copy of verified records for the master to certify as a true copy, upon request from relevant authorities, should also be provided.

4.2 Updates to the electronic record book

As MARPOL and its Annexes continue to evolve, it is essential that all approved electronic record books are reviewed and appropriately updated to ensure relevant MARPOL amendments are incorporated in the electronic record book. Any updates should not cause loss of existing records, nor make them unreadable, and the system should continue to present all records in the form specified by MARPOL. Updates to the system should be completed prior to the entry into force of the relevant MARPOL amendments.

4.3 Security and accountability of the electronic record book

4.3.1 To ensure the security of an electronic record book, it is critical that the system implements Role Based Access Control. At a minimum, all access to the application should use a unique personal login identifier and password for each user. This level of security ensures that the user making entries into the application is accountable for any false entries or omissions.

4.3.2 MARPOL requires the signature of the relevant officer entering a record. As such, the electronic record book should implement Audit Logging. Audit Logging should record a user code, identifying symbol, such as a graphic character, or an equivalent identifier against each entry to uniquely identify the user and whether the user provided accessed or amended an entry.

4.3.3 Electronic signatures applied to an electronic record book should meet authentication standards, as adopted by the Administration.

4.3.4 Records and entries should be protected by measures aimed at preventing and detecting attempts at unauthorized deletion, destruction or amendment. After an entry is saved by the user, the system should secure the information against unauthorized or untraceable changes. Any change(s) to the entry by the same user or a different user should be automatically recorded and made visible both in the system and in any output presentation or printed versions of the electronic record book. The entry should appear in the list of entries in a format that makes it clear that the entry has been amended. To create transparency of changes to saved or verified entries, it is essential that the system is designed to retain both the original entry and the amendment(s).

4.3.5 If an entry requires amendment, it is recommended that the reason and user identifier, for the officer making the amendment, be recorded for verification by the master. The original entries and all amendments should be retained and visible.

4.3.6 MARPOL also requires that information in the record book be verified (e.g. regulation 17 of MARPOL Annex I requires that each page of the Oil Record Book be signed by the master of the ship). For verification of a single or series of saved entries by the master, the electronic record book should have an additional authentication factor to allow verification. This additional authentication factor should be in the form of additional credentials supplied by the master at the time of verification.

4.3.7 The electronic record book should also be able to log and identify the entries made, amended or verified by time. This will assist in identifying those situations where actions requiring an entry are undertaken over days or weeks and all entered at one time, where such an approach to making entries is consistent with MARPOL (e.g. regulation 10 of MARPOL Annex V requires entries to be "promptly recorded" and "signed for on the date of discharge or incineration" by the officer in charge).

4.3.8 To provide for different stages of the data entry and approval process, the electronic record book should provide a status field for each entry that clearly determines the verification stage of the entry. For example, when an entry has been saved in the system by the user, the entry should reflect a term such as "pending" or "awaiting verification". Once the master has verified an entry, a term such as "verified" should be automatically reflected.

4.3.9 If an entry is amended after the master has verified it, the electronic record book should automatically return the entry to "pending" or "re-verification" notifying the master that the entry requires re-verification.

4.3.10 To ensure that entries are verified in a timely manner, the system should provide a reminder that verification by the master is required. It is recommended that where possible, verifications occur prior to arrival in port. Entries not verified should be accompanied by comments advising of the reason for non-verification.

4.3.11 If a recorded entry correlates with a receipt for services (such as a receipt received when waste is discharged to a reception facility), or the endorsement provided during regulatory surveys or inspections (such as endorsement of the Cargo Record Book), the electronic record book should allow this receipt or endorsement to be identified or attached to the relevant entry in the system. This receipt can be referenced in the system with a hard copy receipt or endorsement made available upon request. Alternatively, the receipt or endorsement can be attached to the entry in any form deemed acceptable by the Administration (such as a scanned copy of the original in PDF), and the original retained.

4.4 Storage of data recorded in the electronic record book

4.4.1 To create the same level of confidence as a hard copy record book, any electronic record book should form part of the Information Technology Business Continuity Plan. This includes having an appropriate method for backing up data and data recovery if the system were to fail or not be available from the ships' network. Consideration should also be given to alternate power supplies to ensure consistent access to the system. Both data recovery and power sources are essential to allow ongoing entries to be made and facilitate port State control (PSC) inspections.

4.4.2 The electronic record book should have the capability to allow automatic backup of data in the system to offline storage. Backups should ensure the offline record is updated automatically every time changes are made to entries to ensure the backing up process is not forgotten by the user.

4.4.3 The recorded data stored in the offline space should be:

- .1 developed using cryptography so that unauthorized access to the information is not possible, and so that once the data has been saved it is in a read-only format with no amendments able to be made to the record (unless done so through the application or by a user with the appropriate level of authorization);
- .2 in a format that can be transferred from the point of record to another storage location. Examples include a local (removable) storage peripheral device, local and remote network storage;
- .3 maintained in a format that ensures the longevity and integrity of the record; and
- .4 in a format that allows output presentation and printing of the record.

4.4.4 This offline record may be provided in any format deemed appropriate by the Administration and should be digitally signed by the master. The properties of the digital signature need to appear on the offline record, including the title; full name of the signer; and date and time of signing. It is recommended that the document be presented in PDF; however, an alternative format may be used. Alternative formats should allow the exchange and view of electronic documents independent of the environment in which they were created and the environment in which they are viewed or printed, in a simple way and with fidelity.

4.4.5 An electronic record book and infrastructure related to the system including computers and peripherals, should be installed in compliance with IEC 60092 and IEC 60533, where applicable.

5 DECLARATION

5.1 Any electronic system deemed to meet the above criteria should be provided with written confirmation by the Administration and carried on board the ship for the purpose of regulatory surveys or inspections. An example of a declaration can be seen in the appendix.

5.2 Delegating the assessment of the electronic record book against these Guidelines and the issuing of a declaration on behalf of the Administration by recognized organizations (ROs) is at the discretion of the Administration.

6 MARPOL INSPECTION AND ENFORCEMENT

6.1 Inspection

6.1.1 An electronic record book should have the ability to meet the company verification/audit requirements (such as integration with the ships Safety Management System (International Safety Management Code)). The record book should also have the ability to meet all flag State and survey requirements. In addition, an electronic record book should meet all control provisions as set out in the relevant Annexes of MARPOL. Such a system should also meet any general requirements set out in the *Procedures for port State control, 2017* (resolution A.1119(30)), as amended, as well as support the detection of violations and enforcement of the Convention as outlined in Article 6 of MARPOL.

6.1.2 The use of and reliance upon electronic record books in no way relieves shipowners of their existing duty to accurately maintain and produce records during an inspection, as required by MARPOL. It is recommended that if a ship cannot produce the electronic record book or a declaration provided by the Administration during the PSC inspection, the PSC officer should request to view an alternative verified copy of the records or a hard copy record book for verification.

6.2 Equipment requirements during an inspection

As the electronic record book will be presented using the ships' onboard equipment, it should not be necessary for officers to carry additional equipment (e.g. electronic devices to view the records) during inspections. Officers may choose to carry additional equipment on board to aid in the verification process if the ships' onboard equipment is unavailable.

6.3 Prosecution

To accommodate current procedures when investigating illegal discharges under MARPOL, the electronic record book should allow for the specific entry, relevant page, pages or the entirety of the electronic record book to be printed at the time of an investigation and each printed page physically signed by the master to certify it as a "true copy". All printed pages should provide the following details in addition to those required under MARPOL for record books:

- .1 the title and full name of the person that entered the record (in addition to the person's unique username and/or ID in the electronic record book);
- .2 any changes that were made to the entries;
- .3 the date and time of printing;
- .4 the name and version number of the electronic record book from which the true copy was produced; and
- .5 page numbering and number of pages to ensure the report is complete.

APPENDIX

EXAMPLE DECLARATION

DECLARATION OF MARPOL ELECTRONIC RECORD BOOK

Issued under the authority of the Government of:

.....
(full designation of the country)

In reference to the requirements set out in the
International Convention for the Prevention of Pollution from Ships (MARPOL)

Name of ship.....

IMO number

Flag State of ship.....

Gross tonnage.....

This is to declare that the electronic system designed to record entries in accordance with MARPOL Annex(es) installed on board the ship listed above has been assessed by this Administration to meet the relevant requirements as set out in MARPOL and is consistent with the Guidelines developed by the International Maritime Organization (IMO).

Electronic Record Book Manufacturer

Electronic Record Book Supplier

Electronic Record Book Installer

Electronic Record Book Software
Name/Version

Electronic Record Book is in accordance with
MEPC Resolution/s

Date of installation
(dd/mm/yy)

A copy of this declaration should be carried on board a ship fitted with this Electronic Record Book at all times.

.....
NAME

.....
SIGNATURE

.....
DATE
(dd/mm/yy)

Seal or stamp of the Authority, as appropriate

ANNEX 2**RESOLUTION MEPC.313(74)**
(adopted on 17 May 2019)**AMENDMENTS TO THE 2017 GUIDELINES ADDRESSING ADDITIONAL ASPECTS OF
THE NO_x TECHNICAL CODE 2008 WITH REGARD TO PARTICULAR REQUIREMENTS
RELATED TO MARINE DIESEL ENGINES FITTED WITH SELECTIVE CATALYTIC
REDUCTION (SCR) SYSTEMS (RESOLUTION MEPC.291(71))**

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 (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its fifty-eighth session, it adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI (hereinafter "MARPOL Annex VI") and, by resolution MEPC.177(58), a revised Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (hereinafter "NO_x Technical Code 2008"),

NOTING regulation 13 of MARPOL Annex VI which makes the NO_x Technical Code 2008 mandatory under that Annex,

NOTING ALSO that the use of NO_x-reducing devices is envisaged in the NO_x Technical Code 2008 and that selective catalytic reduction systems (hereinafter referred to as "SCR systems") are such NO_x-reducing devices for compliance with the Tier III NO_x limit,

NOTING FURTHER that, at its sixty-second session, it adopted, by resolution MEPC.198(62), the *2011 Guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) Systems*, and, at its sixty-eighth session, by resolution MEPC.260(68), amendments thereto,

NOTING FURTHER that, at its seventy-first session, it adopted, by resolution MEPC.291(71), the *2017 Guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) Systems* (hereinafter "the 2017 Guidelines"),

RECOGNIZING the need to update the 2017 Guidelines in line with the amendments to the NO_x Technical Code 2008, adopted by the Committee, at its seventy-fourth session, by resolution MEPC.317(74),

HAVING CONSIDERED, at its seventy-fourth session, draft amendments to the 2017 Guidelines, prepared by the Sub-Committee on Pollution Prevention and Response, at its fifth session,

1 ADOPTS amendments to the *2017 Guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with Selective Catalytic Reduction (SCR) Systems*, as set out in the annex to the present resolution;

2 INVITES Administrations to take the aforementioned amendments into account when certifying engines fitted with SCR systems;

3 REQUESTS Parties to MARPOL Annex VI and other Member Governments to bring the amendments to the attention of shipowners, ship operators, shipbuilders, marine diesel engine manufacturers and any other interested parties;

4 AGREES to keep these Guidelines, as amended, under review, in light of experience gained with their application.

ANNEX

**AMENDMENTS TO THE 2017 GUIDELINES ADDRESSING ADDITIONAL ASPECTS OF
THE NO_x TECHNICAL CODE 2008 WITH REGARD TO PARTICULAR REQUIREMENTS
RELATED TO MARINE DIESEL ENGINES FITTED WITH SELECTIVE CATALYTIC
REDUCTION (SCR) SYSTEMS (RESOLUTION MEPC.291(71))**

- 1 Paragraph 1.3 is replaced with the following:

"1.3 According to paragraph 2.2.5.1 of the NTC 2008, where a NO_x-reducing device is to be included within the EIAPP certification, it must be recognized as a component of the engine, and its presence shall be recorded in the engine's Technical File."

- 2 Paragraph 3.1.1 is replaced with the following:

"3.1.1 Engine systems fitted with SCR should be certified in accordance with chapter 2 of the NTC 2008. The procedures provided by Scheme A or Scheme B of these Guidelines should be applied."

ANNEX 3**RESOLUTION MEPC.314(74)
(adopted on 17 May 2019)****AMENDMENTS TO THE ANNEX OF THE INTERNATIONAL CONVENTION FOR THE
PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE
PROTOCOL OF 1978 RELATING THERETO****Amendments to MARPOL Annexes I, II and V****(Electronic Record Books)**

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 Protocol of 1978 relating thereto (MARPOL), which specifies the amendment procedure and confers upon the appropriate body of the Organization the function of considering and adopting amendments thereto,

HAVING CONSIDERED, at its seventy-fourth session, proposed amendments to MARPOL Annexes I, II and V concerning Electronic Record Books, 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 Annexes I, II and V, 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 April 2020 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 October 2020 upon their acceptance in accordance with paragraph 2 above;

4 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;

5 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 ANNEXES I, II AND V

(Electronic Record Books)

MARPOL ANNEX I

REGULATIONS FOR THE PREVENTION OF POLLUTION BY OIL

Regulation 1 – Definitions

- 1 A new paragraph 39 is added as follows:

"39 *Electronic Record Book* means a device or system, approved by the Administration, used to electronically record the required entries for discharges, transfers and other operations as required under this Annex in lieu of a hard copy record book."

Regulation 17 – Oil Record Book Part I – Machinery space operations

- 2 The second sentence of paragraph 1 is replaced by the following:

"The Oil Record Book, whether as a part of the ship's official logbook, as an electronic record book which shall be approved by the Administration taking into account the Guidelines developed by the Organization*, or otherwise, shall be in the form specified in appendix III to this Annex."

- 3 In the second sentence of paragraph 4, the words "or group of electronic entries" are inserted after the words "each completed page".

Regulation 36 – Oil Record Book Part II – Cargo/ballast operations

- 4 The second sentence of paragraph 1 is replaced by the following:

"The Oil Record Book Part II, whether as a part of the ship's official logbook, as an electronic record book which shall be approved by the Administration taking into account the Guidelines developed by the Organization*, or otherwise, shall be in the Form specified in appendix III to this Annex."

- 5 In the second sentence of paragraph 5, the words "or group of electronic entries" are inserted after the words "each completed page".

* Refer to the *Guidelines for the use of electronic record books under MARPOL*, adopted by resolution MEPC.312(74)"

MARPOL ANNEX II

REGULATIONS FOR THE CONTROL OF POLLUTION OF NOXIOUS LIQUID SUBSTANCES IN BULK

Regulation 1 – Definitions

- 6 A new paragraph 22 is added as follows:

"22 *Electronic Record Book* means a device or system, approved by the Administration, used to electronically record the required entries for discharges, transfers and other operations as required under this Annex in lieu of a hard copy record book."

Regulation 15 – Cargo Record Book

- 7 The existing paragraph 1 is replaced by the following:

"Every ship to which this Annex applies shall be provided with a Cargo Record Book, whether as a part of the ship's official logbook, as an electronic record book which shall be approved by the Administration taking into account Guidelines developed by the Organization*, or otherwise, in the form specified in appendix II to this Annex."

- 8 In the first sentence of paragraph 4, the words "or group of electronic entries" are inserted after the words "each page".

MARPOL ANNEX V

REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS

Regulation 1 – Definitions

- 9 A new paragraph 19 is added as follows:

"19 *Electronic Record Book* means a device or system, approved by the Administration, used to electronically record the required entries for discharges, transfers and other operations as required under this Annex in lieu of a hard copy record book."

Regulation 10 – Placards, garbage management plans and garbage record-keeping

- 10 The second sentence of the chapeau of paragraph 3 is replaced by the following:

"The Garbage Record Book, whether as a part of the ship's official logbook, or as an electronic record book which shall be approved by the Administration taking into account the Guidelines developed by the Organization*, or otherwise, shall be in the form specified in appendix II to this Annex:"

- 11 In the second sentence of paragraph 3.1, the words "or group of electronic entries" are inserted after the words "each completed page".

* Refer to the *Guidelines for the use of electronic record books under MARPOL*, adopted by resolution MEPC.312(74)"

ANNEX 5

**RESOLUTION MEPC.316(74)
(adopted on 17 May 2019)**

**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

(Electronic Record Books and EEDI regulations for ice-strengthened ships)

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,

HAVING CONSIDERED, at its seventy-fourth session, proposed amendments to MARPOL Annex VI concerning Electronic Record Books and EEDI regulations for ice-strengthened ships, 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 April 2020 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 October 2020 upon their acceptance in accordance with paragraph 2 above;

4 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;

5 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

(Electronic Record Books and EEDI regulations for ice-strengthened ships)

Regulation 2 – Definitions

- 1 Paragraph 42 is replaced by the following:

"42 *Polar Code* means the International Code for Ships Operating in Polar Waters, consisting of an introduction, parts I-A and II-A and parts I-B and II-B, adopted by resolutions MSC.385(94) and MEPC.264(68), as may be amended, provided that:

- .1 amendments to the environment-related provisions of the introduction and chapter 1 of part II-A of the Polar Code are adopted, brought into force and take effect in accordance with the provisions of article 16 of the present Convention concerning the amendment procedures applicable to an appendix to an annex; and
- .2 amendments to part II-B of the Polar Code are adopted by the Marine Environment Protection Committee in accordance with its Rules of Procedure."

- 2 A new paragraph 51 is added as follows:

"51 *Electronic Record Book* means a device or system, approved by the Administration, used to electronically record the required entries for discharges, transfers and other operations as required under this Annex in lieu of a hard copy record book."

Regulation 12 – Ozone-depleting substances

- 3 In the second sentence of paragraph 6, the words "recording system" are replaced by "record book".

- 4 A new sentence is inserted at the end of paragraph 6 as follows:

"An electronic recording system referred to in regulation 12.6, as adopted by resolution MEPC.176(58), shall be considered an electronic record book, provided the electronic recording system is approved by the Administration on or before the first International Air Pollution Prevention (IAPP) Certificate renewal survey carried out on or after 1 October 2020, but not later than 1 October 2025, taking into account the Guidelines developed by the Organization"

Regulation 13 – Nitrogen oxides (NO_x)

- 5 In paragraph 5.3, the words "or electronic record book", " are inserted after the words "shall be recorded in such logbook".

"* Refer to the *Guidelines for the use of electronic record books under MARPOL*, adopted by resolution MEPC.312(74)."

Regulation 14 – Sulphur oxides (SO_x) and particulate matter

6 In the last sentence of paragraph 6, the words "or electronic record book*," are inserted after the words "shall be recorded in such logbook".

Regulation 19 – Application

7 In the last sentence of paragraph 3, the words "cargo ships having ice-breaking capability" are replaced by the words "category A ships as defined in the Polar Code".

Appendix I

Form of International Air Pollution Prevention (IAPP) Certificate (Regulation 8)

8 In the introductory paragraph of Appendix I, the words "by resolution MEPC.176(58) in 2008" are deleted.

Appendix VIII

Form of International Energy Efficiency (IEE) Certificate

9 In the introductory paragraph, the words "by resolution MEPC.203(62)" are deleted.

Appendix X

Form of Statement of Compliance – Fuel Oil Consumption Reporting

10 In the introductory paragraph, the word "by" between "Pollution" and "Ships" in the first sentence is replaced by the word "from".

* Refer to the *Guidelines for the use of electronic record books under MARPOL*, adopted by resolution MEPC.312(74)."

ANNEX 6**RESOLUTION MEPC.317(74)
(adopted on 17 May 2019)****AMENDMENTS TO THE NO_x TECHNICAL CODE 2008****(Electronic Record Books and Certification requirements for SCR systems)**

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 and adopting amendments thereto,

RECALLING FURTHER regulation 13 of MARPOL Annex VI which makes the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines ("the NO_x Technical Code 2008") mandatory under that Annex,

HAVING CONSIDERED, at its seventy-fourth session, draft amendments to the NO_x Technical Code 2008 related to Electronic Record Books and certification requirements for SCR systems, 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 the NO_x Technical Code 2008, as 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 April 2020, 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 October 2020 upon their acceptance in accordance with paragraph 2 above;

4 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;

5 REQUESTS ALSO the Secretary-General to transmit copies of the present resolution and its annex to the Members of the Organization which are not Parties to MARPOL.

ANNEX

AMENDMENTS TO THE NO_x TECHNICAL CODE 2008

(Electronic Record Books and Certification requirements for SCR systems)

Chapter 1 – General

1.3 Definitions

- 1 A new paragraph 1.3.20 is added as follows:

"1.3.20 *Electronic Record Book* means a device or system, approved by the Administration, used to electronically record the entries required under this Code in lieu of a hard copy record book."

Chapter 2 – Surveys and certification

2.2 Procedures for pre-certification of an engine

- 2 Paragraph 2.2.5.1 is replaced by the following:

".1 Where a NO_x-reducing device is to be included within the EIAPP certification, it must be recognized as a component of the engine, and its presence shall be recorded in the engine's Technical File. The applicable test procedure shall be performed and the combined engine/NO_x-reducing device shall be approved and pre-certified by the Administration taking into account Guidelines developed by the Organization*. However, the pre-certification in accordance with the procedure not involving the testing for the combined engine/NO_x-reducing device on a test bed as given by the Guidelines developed by the Organization is subject to the limitations given in paragraph 2.2.4.2."

Chapter 6 – Procedures for demonstrating compliance with NO_x emission limits on board

6.2.2 Documentation for an engine parameter check method

- 3 In paragraph 6.2.2.7.1, after the words "a record book", the words "or electronic record book**" are inserted.

Appendix I Form of EIAPP Certificate

- 4 In the introductory paragraph, the words "by resolution MEPC.176(58) in 2008" are deleted.

* Refer to the 2017 Guidelines addressing additional aspects to the NO_x Technical Code 2008 with regard to particular requirements related to marine diesel engines fitted with selective catalytic reduction (SCR) systems, adopted by resolution MEPC.291(71), as amended (resolution MEPC.313(74)).

** Refer to the Guidelines for the use of electronic record books under MARPOL, adopted by resolution MEPC.312(74)."

ANNEX 9**UPDATED UNIFIED INTERPRETATION OF APPENDIX I (FORM OF THE
INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE) OF THE BWM
CONVENTION****Appendix I – Form of the International Ballast Water Management Certificate****"Date installed" in relation to "Method of ballast water management used"**

1 For the purpose of completing the International Ballast Water Management Certificate, the date when commissioning has been completed in accordance with section 8 of the BWMS Code (resolution MEPC.300(72)) should be used.

2 Notwithstanding the above, it should be noted that, with regard to the deadline for installing a ballast water management system, operative paragraph 5 of resolution MEPC.300(72) (*Code for Approval of Ballast Water Management Systems*) is as follows:

"5 RESOLVES that, for the purpose of operative paragraph 4 of this resolution, the word "installed" means the contractual date of delivery of the ballast water management system to the ship. In the absence of such a date, the word "installed" means the actual date of delivery of the ballast water management system to the ship;"

3 Consequently, two dates, i.e. the contractual date of delivery or the actual date of delivery, and the date following commissioning and operation, may exist in relation to installing a ballast water management system.

ANNEX 10

DRAFT AMENDMENTS TO THE BWM CONVENTION

Regulation E-1

Surveys

1 Paragraph 1.1 is replaced by the following:

"1.1 An initial survey before the ship is put in service or before the Certificate required under regulation E-2 or E-3 is issued for the first time. This survey shall verify that the ballast water management plan required by regulation B-1 and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the requirements of this Convention. This survey shall confirm that a commissioning test has been conducted to validate the installation of any ballast water management system to demonstrate that its mechanical, physical, chemical and biological processes are working properly, taking into account guidelines developed by the Organization.¹"

2 Paragraph 1.5 is replaced by the following:

"1.5 An additional survey, either general or partial, according to the circumstances, shall be made after a change, replacement, or significant repair of the structure, equipment, systems, fittings, arrangements and material necessary to achieve full compliance with this Convention. The survey shall be such as to ensure that any such change, replacement or significant repair has been effectively made, so that the ship complies with the requirements of this Convention. When an additional survey is undertaken for the installation of any ballast water management system, this survey shall confirm that a commissioning test has been conducted to validate the installation of the system to demonstrate that its mechanical, physical, chemical and biological processes are working properly, taking into account guidelines developed by the Organization.¹"

Appendix I

Form of the International Ballast Water Management Certificate

3 The footnote of "IMO Number" under the item of "Particulars of ship" is replaced by the following:

"IMO Ship Identification Number Scheme adopted by the Organization by resolution A.1117(30), as amended."

4 The "Details of ballast water management method(s) used" is replaced by the following:

"Details of ballast water management method(s) used"

Method of ballast water management used
 Date installed (if applicable)
 Name of manufacturer (if applicable)

¹ Refer to the *Guidance for the commissioning testing of ballast water management systems* (BWM.2/Circ.70), as may be amended by the Organization."

The principal ballast water management method(s) employed on this ship is/are:

- ☐ in accordance with regulation D-1
- ☐ in accordance with regulation D-2
- (describe)
- ☐ the ship is subject to regulation D-4
- ☐ other approach in accordance with regulation "

ANNEX 11**DRAFT MSC-MEPC CIRCULAR ON DELIVERY OF COMPLIANT FUEL OIL
BY SUPPLIERS**

1 The Maritime Safety Committee at its one hundred and first session (5 to 14 June 2019) and the Marine Environment Protection Committee at its seventy-fourth session (13 to 17 May 2019) recommended that Member States should take appropriate action to ensure that fuel oil suppliers under their jurisdiction deliver compliant fuel oil.

2 SOLAS and MARPOL contain provisions applicable to the supply of compliant fuel oil to ships that relate to both safety and environmental requirements. Specifically, safety and fuel oil quality are addressed in SOLAS chapter II-2 and regulations 14 and 18 of MARPOL Annex VI.

3 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. Fuel oil for combustion purposes delivered to and used on board ships to which MARPOL Annex VI applies shall meet the requirements set out in regulation 18.3 of MARPOL Annex VI.

4 Pursuant to regulation 18.9 of MARPOL Annex VI, Parties undertake to ensure that appropriate authorities designated by them 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.

5 Members States should urge fuel oil suppliers to take into account the following guidance, as relevant:

Guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships (MEPC.1/Circ.875); and

Guidance on best practice for fuel oil suppliers for assuring the quality of fuel oil delivered to ships (MEPC.1/Circ.875/Add.1).

6 Member States are invited to bring this guidance to the attention of Administrations, recognized organizations, port authorities, shipowners, ship operators, fuel oil suppliers, shippers/manufacturers and other parties concerned.

ANNEX 12

UNIFIED INTERPRETATIONS TO MARPOL ANNEX VI (REGULATIONS 13.2.2, 13.5.3, 14.1 AND 16.9)

1 Time of replacement of an engine*

Regulation 13.2.2 reads as follows:

"2.2 For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine, or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply."

Interpretation:

1.1 The term "time of the replacement or addition" of the engine in regulation 13.2.2 should be taken as the date of:

- .1 the contractual delivery date of the engine to the ship;¹ or
- .2 in the absence of a contractual delivery date, the actual delivery date of the engine to the ship,¹ provided that the date is confirmed by a delivery receipt; or
- .3 in the event the engine is fitted onboard and tested for its intended purpose on or after six (6) months from the date specified in sub-paragraphs of regulation 13.5.1.2, as appropriate, the actual date that the engine is tested onboard for its intended purpose applies in determining the standards in this regulation in force at the time of the replacement or addition of the engine.

1.2 Entry of the date in paragraph 7.1 above, provided the conditions associated with those dates apply, should be made in the item 8.a "Major conversion – According to regulations. 13.2.1.1 and 13.2.2" of the Supplement of IAPP Certificate.

1.3 If the engine is not tested within six (6) months after the date specified in sub-paragraphs of regulation 13.5.1.2, as appropriate due to unforeseen circumstances beyond the control of the shipowner, then the provisions of "unforeseen delay in delivery" may be considered by the Administration in a manner similar to UI4 of MARPOL Annex I.

2 Engine changeover/on-off recording requirements

Regulation 13.5.3 reads as follows:

"The tier and on/off status of marine diesel engines installed on board a ship to which paragraph 5.1 of this regulation applies which are certified to both Tier II and Tier III or which are certified to Tier II only shall be recorded in such logbook as prescribed by the Administration at entry into and exit from an emission control area designated under paragraph 6 of this regulation, or when the on/off status changes within such an area, together with the date, time and position of the ship."

* If approved, the unified interpretation should replace the unified interpretation in section 7 of the annex to MEPC.1/Circ.795/Rev.3.

¹ The engine is to be fitted on board and tested for its intended purpose before 1 July 2016."

Interpretation:

For the application of this regulation:

- .1 "marine diesel engines installed on board a ship to which paragraph 5.1 of this regulation applies" includes additional or replaced engine² installed on or after the relevant emission control area takes effect;
- .2 "certified to Tier II only" means a Tier II engine that is installed on board a ship which is constructed on or after the emission control area where the ship is operating takes effect;
- .3 Tier II engines stipulated under the Tier II requirement of regulation 13.4, i.e. Tier II engines installed on board a ship constructed before the entry into force of the emission control area where the ship is operating, are not considered to be a "Tier II only" engine in the context of record keeping. Such exclusion is extended to Tier II engines replaced after the entry into force of the relevant emission control areas on board ships of this category, if the replacement engines meet resolution MEPC.230(65);
- .4 if an engine installed on a ship constructed before the entry into force of the emission control area where the ship is operating has undergone a major conversion as described in regulation 13.2.1, those engines are to be Tier III engines; thus the above interpretation in .1 above applies; and
- .5 recording is required for the Tier II engine operation in a NECA under the exemption according to regulation 13.5.4.

3 Application of sulphur limit to emergency equipment

Regulation 14

General Requirements

Regulation 14.1 reads as follows:³

- "1 The sulphur content of fuel oil used or carried for use on board a ship shall not exceed 0.50% m/m."

Interpretation:

Regulation 14.1 of MARPOL Annex VI for the prohibition on carriage of non-compliant fuel oil should be applied to the fuel oil of emergency equipment.

² additional or replaced engine: refer to section 7.1."

³ Unified Interpretation is applicable when MEPC.305(73) enters into force on 1 March 2020."

4 Shipboard incinerators**

Regulation 16.9 reads as follows:

"For incinerators installed in accordance with the requirements of paragraph 6.1 of this regulation the combustion chamber gas outlet temperature shall be monitored at all times the unit is in operation. Where that incinerator is of the continuous-feed type, waste shall not be fed into the unit when the combustion chamber gas outlet temperature is below 850°C. Where that incinerator is of the batch loaded type, the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up and will thereafter stabilize at a temperature not less than 850°C."

Interpretation:

For the application of this regulation, the term "waste shall not be fed into the unit" should be interpreted as follows:

For continuous-feed incinerators solid waste shall not be fed into the unit when the combustion chamber flue gas outlet temperature is below 850°C. Sludge oil generated during normal operation of a ship should not be regarded as waste in connection with this regulation, and can be fed into the unit when the required preheat temperature of 650°C in the combustion chamber is achieved.

For the application of this regulation, the term "the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up" should be interpreted as follows:

Batch loaded incinerators should be designed so that the temperature in the actual combustion space where the solid waste is combusted should reach 600°C within five minutes after start-up."

** If approved, the unified interpretation should replace the unified interpretation in section 9 of the annex to MEPC.1/Circ.795/Rev.3.

ANNEX 13

DRAFT AMENDMENTS TO MARPOL ANNEX VI (REGULATIONS 1, 2, 14, 18, 20, 21, APPENDIX I AND APPENDIX VI)

Regulation 1

Application

- 1 The paragraph is replaced with the following:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise."

Regulation 2

Definitions

- 2 New paragraphs 52, 53, 54, 55 and 56 are added 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 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.

56 *Onboard sample* means the 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 "In-use and onboard fuel oil sampling and testing" and a new paragraph 8 and 9 are added at the end of regulation 14 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 fuel oil sample to be analysed, it shall be done in accordance with the verification procedure set forth in appendix VI 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 fuel oil sample shall be drawn taking into account the guidelines developed by the Organization.² The onboard fuel oil sample shall be drawn taking into account the guidelines to be developed by the Organization.³

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

"2 Refer to the 2019 *Guidelines for onboard 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 Guidelines to be developed prior to entry into force of the provision."

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."

4 "In-use fuel oil sampling point" and new paragraphs 10, 11, 12 and 13 are added at the end of regulation 14 as follows:

"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 guidelines developed by the Organization.²

11 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.

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 fitted or designated for the purpose of taking representative sample(s) of the fuel oil being used on board in order to verify 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

5 Paragraph 8.2 is replaced with 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 determine whether the fuel oil meets the requirements of this Annex."

Regulation 20

Attained Energy Efficiency Design Index (attained EEDI)

6 Regulation 20 of MARPOL Annex VI shall be amended by adding a new paragraph 3, as follows:

"3 For each ship subject to regulation 21, 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 Organization⁴ via electronic communication:

.1 within seven months of completing the survey required under regulation 5.4 of this Annex; or

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."

- .2 within seven months following [insert date of entry into force of amendment] for a ship delivered prior to [insert date of entry into force of amendment]."

Regulation 21

Required EEDI

7 Table 1 is amended as follows:

"Table 1. Reduction factors (in percentage) for the EEDI relative to the EEDI reference line

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 Dec 2024	Phase 3 1 Jan 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 Dec 2024	Phase 3 1 Jan 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."

8 In table 2 (Parameters for determination of reference values for the different ship types), row 2.25 for bulk carriers is replaced by the following:

Ship type defined in regulation 2	a	b	c
2.25 Bulk carrier	961.79	DWT of the ship where $DWT \leq 279,000$ 279,000 where $DWT > 279,000$	0.477

Appendix I

Form of International Air Pollution Prevention (IAPP) Certificate (Regulation 8)

Supplement to the International Air Pollution Prevention Certificate (IAPP Certificate)

9 New paragraphs 2.3.4 and 2.3.5 are added 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 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)

10 Appendix VI is replaced with 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 delivered⁵ 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 use⁶, 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 "on board sample"⁷ as defined in regulation 2.56.

Part 1 – MARPOL delivered fuel oil sample

1 General Requirements

1.1 The representative fuel oil sample, 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 accreditation⁸ 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 onboard 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 Guidelines to be developed by the Organization prior to entry into force of the provision."

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 fuel oil sample procedure

On the basis of the test method referred to in regulation 2.52 of this Annex		
Applicable limit % m/m: V	Result 2.5.1: $X \leq V$	Result 2.5.2: $X > V$
0.10	Met the requirement	Not met the requirement
0.50		
	Result "X" reported to 2 decimal places	

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

2.7 The laboratory shall provide a copy of the test record to the competent authority managing the verification procedure.

⁹ Repeatability (r) calculation in accordance with ISO 4259:2017-2 and as defined in the test method used."

Part 2 – In-use and onboard fuel oil samples

3 *General Requirements*

- 3.1 The in-use or onboard fuel oil 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 accreditation¹⁰ in respect of the test method to be used.

4 *Verification Procedure Part 2*

- 4.1 The in-use or onboard fuel oil 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":
- .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

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."

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

- .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.
- .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 fuel oil sample procedure¹³

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 4.5.1: Z ≤ V	Result 4.5.2: V < Z ≤ W	Result 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		

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."

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

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."

ANNEX 14

**RESOLUTION MEPC.320(74)
(adopted 17 May 2019)**

**2019 GUIDELINES FOR CONSISTENT IMPLEMENTATION OF
THE 0.50% SULPHUR LIMIT UNDER MARPOL ANNEX VI**

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 (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its fifty-eighth session, the Committee adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI which significantly strengthens the emission limits for sulphur oxides (SO_x),

RECALLING FURTHER that, at its seventieth session, the Committee adopted, resolution MEPC.280(70), *Effective date of implementation of the fuel oil standard in regulation 14.1.3 of MARPOL Annex VI*, confirming "1 January 2020" as the effective date of implementation for ships to comply with global 0.50% m/m sulphur content of fuel oil requirement,

NOTING ALSO that, at its seventy-third session, the Committee approved circular MEPC.1/Circ.878 on the *Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*,

HAVING CONSIDERED, at its seventy-fourth session, draft 2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI, prepared by the Sub-Committee on Pollution Prevention and Response, at its sixth session,

- 1 ADOPTS the *2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*, as set out in the annex to the present resolution;
- 2 REQUESTS Parties to MARPOL Annex VI and other Member Governments to bring these Guidelines to the attention of shipowners, ship operators, fuel oil suppliers and any other interested groups;
- 3 AGREES to keep these Guidelines under review in the light of experience gained with their application.

ANNEX

2019 GUIDELINES FOR CONSISTENT IMPLEMENTATION OF THE 0.50% SULPHUR LIMIT UNDER MARPOL ANNEX VI

1 Introduction

1.1 Objective

1.1.1 The purpose of these Guidelines is to ensure consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI. These Guidelines are intended for use by Administrations, port States, shipowners, shipbuilders and fuel oil suppliers, as appropriate.

1.2 Definitions

1.2.1 For the purpose of these Guidelines, the definitions in MARPOL Annex VI apply.

1.2.2 The following definitions of fuel oils are used, as applicable:

- .1 Distillate marine fuels (DM) are as specified in ISO 8217:2017¹ (e.g. DMA, DMB, DMX, DMZ);
- .2 Residual marine fuels (RM) are as specified in ISO 8217:2017¹ (e.g. RMD 80, RMG 380);
- .3 Ultra-low sulphur fuel oil (ULSFO) are as specified in ISO 8217:2017¹ (e.g. maximum 0.10% S ULSFO-DM, maximum 0.10% S ULSFO-RM);
- .4 Very low sulphur fuel oil (VLSFO) (e.g. maximum 0.50% S VLSFO-DM, maximum 0.50% S VLSFO-RM); and
- .5 High sulphur heavy fuel oil (HSHFO) exceeding 0.50% S.

2 Ship implementation planning for 2020

2.1 MEPC 70 agreed to "1 January 2020" as the effective date of implementation for ships to comply with the 0.50% m/m fuel oil sulphur content limit requirement and adopted resolution MEPC.280(70) on the *Effective date of implementation of the fuel oil standard in regulation 14.1.3 of MARPOL Annex VI*².

2.2 In this context, MEPC 73 agreed that Administrations should encourage ships flying their flag to develop implementation plans, outlining how the ship may prepare in order to comply with the required sulphur content limit of 0.50% by 1 January 2020. The plan should be complemented with a record of actions taken by the ships in order to be compliant by the applicable date.

2.3 MEPC 73, recognizing the need for guidance to support the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI, approved MEPC.1/Circ.878 on the *Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*.

¹ The latest edition of the ISO standard is recommended.

² Regulation 14.1.3 of MARPOL Annex VI, was amended by resolution MEPC.305(73).

3 Impact on fuel and machinery systems

3.0.1 The experiences and lessons learned from the transition to the 0.10% m/m SO_x-ECA limit indicated that current ship machinery operations should be sufficiently capable of addressing the concerns regarding combustion of the new 0.50% m/m limit fuel oils.

3.0.2 Currently most of the marine diesel engines and boilers on ships operating outside Emission Control Areas (ECAs) are optimized to operate on heavy fuel oil. From 2020 ships are required to use fuel oils with a sulphur content of 0.50% m/m or lower, unless fitted with an approved equivalent means of compliance.

3.1 Distillate fuels

3.1.1 A major challenge with distillate fuels is low viscosity. Low viscosity may cause internal leakages in diesel engines, boilers and pumps. Internal leakages in fuel injection system may result in reduced fuel pressure to the engine, which may have consequences for the engine performance (e.g. starting of the engine). Equipment makers recommendations should be taken into account, and adequate testing, maintenance and possible installation of coolers, etc. may be performed.

3.1.2 Cold Filter Plugging Points (CFPP) and Cloud Points (CP) as well as the Pour Point (PP) for distillate fuels need to be considered in light of the ship's intended operating area and ambient temperatures.

3.1.3 These issues are critical concerns as they can result in the formation and accumulation of wax sediment, which can cause costly and avoidable maintenance. In the worst-case scenario, sediment can cause engine fuel starvation and power loss.

3.1.4 ISO 8217:2017³ limits the cold flow properties of a fuel through setting a limit on the PP. However, given that wax crystals form at temperatures above the PP, fuels that meet the specification in terms of PP can still be challenging to operations in colder operating regions, as the wax particles can rapidly block filters, potentially plugging them completely. For cold weather, additional cold flow properties, CFPP and CP, should be reported by the supplier when the receiving ship has ordered distillate fuel for cold weather operations, a requirement that is specified in ISO 8217:2017³.

3.1.5 Since the residual fuels are usually heated and distillate fuels are not heated, particular attention needs to be given to the cold flow properties of distillates. Cold flow property challenges can be managed by heating the fuel. CIMAC has issued "01 2015 CIMAC Guideline Cold flow properties of marine fuel oils"⁴.

3.1.6 Fuel temperature should be kept approximately 10°C above the PP in order to avoid any risk of solidification, however this may not reduce the risk of filter blocking in case of high CFPP and CP.

3.1.7 It is good practice to review the possibilities of heating arrangements for distillate fuels on board. This is usually very limited, as it is not standard practice to have heating arrangements in distillate storage, settling or service tanks. Transfer arrangements may be adapted to pass through a residual fuel oil heat exchanger should the need arise.

³ The latest edition of the ISO standard is recommended.

⁴ https://www.cimac.com/cms/upload/workinggroups/WG7/CIMAC_WG7_2015_01_Guideline_Cold_Flow_Properties_Marine_Fuel_Oils_final.pdf

3.1.8 Knowing the fuel properties before bunkering will assist in taking the necessary precautions where and when necessary. If the ship is heading towards colder climates and the cold flow properties are inferior, the fuel may be:

- .1 either used before entering cold regions, or
- .2 used with suitable heating arrangement, as mentioned above.

3.1.9 If the approach of applying heat is being followed it should be ensured that the fuel is not overheated resulting in the viscosity dropping below the minimum recommendation of 2 cSt at any point in the fuel system, including the engine inlet. In order to reduce this risk, heating should be limited to max 40°C.

3.2 *Distillate fuel with FAME content*

3.2.1 Increased demand for Distillate fuels may result in more land-based products making their way into the marine supply pool, some of these fuels (e.g. biodiesel) may contain Fatty Acid Methyl Ester (FAME).

3.2.2 There are various technical challenges associated with use of fuel having FAME content, e.g. potential oxidation of biodiesel, its biodegradable nature, etc. with adverse implications, limitations in storage life, etc. It also needs to be tested for stability.

3.2.3 The ISO 8217:2017³ standard includes a maximum FAME content of 7.0% by volume for DFA/DFZ/DFB fuel oil grades since some ports may offer automotive diesel fuel as the only fuel available, which contains FAME and could violate the fuel flashpoint requirements addressed in SOLAS chapter II-2. The maximum 7.0% (v/v) has been chosen as this aligns with the concentrations allowed in some of the countries applying environmental regulations.

3.2.4 Manufacturers of engines and equipment like oily water separators, overboard discharge monitors, filters, coalescers, etc. need to be consulted to confirm the ability of engines and equipment to handle biodiesel blends of up to B7 (i.e. 7.0% v/v).

3.2.5 It is recommended to avoid using such biodiesel blend fuels for lifeboat engines, emergency generators, fire pumps, etc. where it is stored in isolated individual unit fuel tanks and subjected to conditions for accelerated degradation.

3.2.6 CIMAC has provided a Guideline for Shipowners and Operators on Managing Distillate Fuels up to 7.0% v/v FAME (Biodiesel).⁵

3.3 *Residual fuels*

3.3.1 *Stability and compatibility*

3.3.1.1 It is essential to distinguish between "Fuel stability" within a single batch of fuel and "Fuel compatibility" between different fuel batches.

3.3.1.2 Regarding stability: the fuel shall be stable and homogeneous at delivery and it is the responsibility of the fuel oil blenders and suppliers to ensure this.

⁵ https://www.cimac.com/cms/upload/workinggroups/WG7/CIMAC_WG7_Guideline_for_Ship_Owners_and_Operators_on_Managing_Distillate_Fuels_May_2013.pdf

3.3.1.3 A wide range of blends of refined products will be used to make the new 0.50% sulphur fuels, and the stability and compatibility of the blends will be an important concern for shipowners/operators. Unstable fuels can separate on their own and incompatible ones can do so when mixed in a single bunker tank, forming sludge that can block filters and ultimately cause engine failures.

3.3.1.4 It is recommended that ships have a commingling procedure. The procedure should primarily aim to ensure new bunkers are loaded into empty tanks to the extent possible. In the event that a ship finds itself possibly having to commingle a new bunker with bunkers already on board, then it is important that the ship determines the compatibility between the two said bunkers before comingling.

3.3.1.5 The reference test method shall be the total potential sediment test in accordance with ISO 10307-2:2009.

3.3.2 *Catalytic fines (cat fines)*

3.3.2.1 Cat fines are a by-product of refining and consist of small particles of metal that are deliberately introduced as catalysts to "crack" the fuel oil. Unless reduced by purification, cat fines will become embedded in engine parts and cause serious and rapid engine damage. Reference should be made to engine manufacturer's guidance with respect to managing cat fines.

3.4 **Key technical considerations for shipowners and operators**

3.4.1 Ship tank configuration and fuel system – the viscosity of most of these blended residual fuels is such that they cannot be used in distillate fuel-only systems and machinery, as they require heating for cleaning and combustion. A fully segregated fuel system for both distillate fuels and these new fuels is recommended.

3.4.2 Tank cleaning is recommended when using a residual fuel tank for storing these new fuels. This is to prevent sludge that has built up in these tanks from entering the fuel system. Further information on tank cleaning is set out in appendix 3 of MEPC.1/Circ.878 on *Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*.

3.4.3 Heating requirements – due to the cold flow properties of most of these new fuels, permanent heating of the fuel may be necessary to minimize the risk of wax formation, also in storage. This is especially important in colder regions.

3.4.4 Fuel treatment system – Some of these new fuels may contain cat fines and/or sediments and therefore need onboard cleaning. Separator temperature and settings should be adjusted to the fuels' viscosity and density. Please refer to recommendations from OEM and fuel supplier.

3.4.5 Considering that many of these new fuels have lower viscosities compared to conventional residual fuels, care should be taken to ensure no overheating occurs.

3.5 **ISO Standard for residual fuels**

3.5.1 The bunker market uses ISO 8217:2017⁶ specifications to ensure that the properties of the fuels it delivers conform to a standard that mean they comply with MARPOL Annex VI.

⁶ The latest edition of the ISO standard is recommended.

3.5.2 The existing ISO 8217:2017⁶ specification for marine fuels takes into consideration the diverse nature of marine fuels and incorporates a number of categories of distillate or residual fuels, even though not all categories may be available in every supply location it covers all marine petroleum fuel oils used today as well as the 0.50% Sulphur fuels of 2020. The General requirements, in the ISO 8217:2017⁶ specification for marine fuels and characteristics, included in table 1 and 2 of ISO 8217:2017⁶ identified safety, performance and environmental concerns and further takes into consideration the onboard handling requirements, including storage, cleaning and combustion aspects of all fuel oils used today and the anticipated fuel blends of 2020, irrespective of the sulphur content of the fuel oils.

3.5.3 It is important that any new standards address and do not preclude the use of renewable and alternative non-fossil crude derived products, so long as they comply with the chemical properties specified for these fuel oils.

3.6 *Cylinder lubrication*

3.6.1 The choice of cylinder lubricating oils will often follow the fuel type in use. Therefore, when changing to VLSFO operation from RM operation the choice of appropriate cylinder lubricating oil should be considered in accordance with the recommendations of the engine manufacturer.

4 Verification issues and control mechanism and actions

4.1 *Survey and certification by Administrations*

4.1.1 When undertaking a survey in accordance with regulation 5 of MARPOL Annex VI, the Administration should conduct a survey of a ship to verify that the ship complies with the provisions to implement the 0.50% sulphur limit. In particular, the Administration should check whether the ship carries compliant fuel oils for use, based on the Bunker Delivery Note (BDN) on board, any other document or fuel oil samples as appropriate consistent with the provisions of regulation 18 of MARPOL Annex VI. If carriage of HSHFO for use is identified, the Administration should check whether regulation 3.2, regulation 4 of MARPOL Annex VI are applied to the ship, or if the ship encountered a fuel availability problem and is operating pursuant to regulation 18.2 of MARPOL Annex VI.

4.1.2 When an Administration decides to analyse a fuel oil sample to determine compliance with the sulphur limits in regulation 14.1 or 14.4, the final analysis should be carried out in accordance with ISO 8754:2003 by a laboratory that is accredited for the purpose of conducting the test in accordance with ISO/IEC 17025 or an equivalent standard. The test results should be in accordance with ISO 8754 reporting protocol, meaning a tested value at or above 0.10% sulphur should be reported with no more than two decimal places.

4.1.3 According to regulation 11.4 of MARPOL Annex VI, the Administration shall investigate any report of an alleged violation and thereafter promptly inform the Party which made the report, as well as the Organization, of the action taken. When informing the Organization, the MARPOL Annex VI GISIS module should be used.

4.2 Control measures by port States

4.2.1 Port States should take appropriate measures to ensure compliance with the 0.50% of sulphur limit under MARPOL Annex VI, in line with the regulation 10 of MARPOL Annex VI and the *2019 Guidelines for port State control under MARPOL Annex VI* (resolution MEPC.[...](74)) (2019 PSC Guidelines). Specifically, the port State should conduct initial inspections based on documents and other possible materials, including remote sensing and portable devices. Given "clear grounds" to conduct a more detailed inspection, the port State may conduct sample analysis and other detailed inspections to verify compliance to the regulation, as appropriate.

4.2.2 Regulation 18.2.3 of MARPOL Annex VI requires a Party to take into account all relevant circumstances and the evidence presented to determine the action to take, including not taking control measures. Administrations and port State control authorities may take into account the implementation plan when verifying compliance with the 0.50% sulphur limit requirement.

4.2.3 *Inspections based on documents and other possible targeting measurements*

4.2.3.1 During the port State control and other enforcement activities, the port State should investigate whether a ship carries either compliant fuel oils or HSHFOs for use, based on the documents listed in paragraph 2.1.2 of the 2019 PSC Guidelines additionally records required to demonstrate compliance should also then be viewed. Results from remote sensing could be used to trigger inspections and portable devices could be used during the initial inspections, as appropriate. Remote sensing and portable devices are, however, of indicative nature and should not be regarded as the evidence of non-compliance but may be considered clear grounds for expanding the inspection.

4.2.3.2 Port state should determine if regulations 3.2, 4 or 18.2.3 apply together with retained bunker delivery notes and IAPP Certificate when considering the status of any HSHFO being carried for use on board.

4.2.4 *Fuel oil sample analysis*

4.2.4.1 When the port State identifies clear grounds of suspected non-compliance of a ship based on initial inspections, the port State may require samples of fuel oils to be analysed. The samples to be analysed may be either the representative samples provided with BDN in accordance with regulation 18.8.2, MARPOL delivered samples or samples from designated sampling points in accordance with the *2019 Guidelines for onboard sampling for the verification of the sulphur content of the fuel oil used on board ships* (MEPC.1/Circ.864/Rev.1) (in-use fuel oil samples) or other samples obtained by the port State.

4.2.4.2 Where the MARPOL delivered sample is taken from the ship a receipt should be provided to the ship. The outcome of the analysis undertaken with appendix VI of MARPOL Annex VI should be advised to the ship for its records.

4.2.4.3 In detecting suspected non-compliance, the sample analysis should be conducted in a uniform and reliable manner as described in paragraph 4.1.2. The verification procedure for MARPOL delivered samples should be in accordance with appendix VI⁷ of MARPOL Annex VI. For other samples taken on board the ship, the in-use and onboard sample, the sample should

⁷ Amendments to MARPOL VI, Appendix VI, *Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8)*, expected to be adopted in Spring 2020 and set out in annex 13 to document MEPC 74/18/Add.1.

be deemed to meet the requirements provided the test result from the laboratory does not exceed the specification limit $+0.59R$ (where R is the reproducibility of the test method) and no further testing is necessary.

4.2.4.4 Notwithstanding the above process, all possible efforts should be made to avoid a ship being unduly detained or delayed. In particular, sample analysis of fuel oils should not unduly delay the operation, movement or departure of the ship.

4.2.4.5 If a 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. In addition, the port State should report the information of the ship using or carrying for use non-compliant fuel oil to the Administration of the ship and inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of non-compliant fuel oil, giving all relevant information. Upon receiving the information, the Party detecting the deficiency should report the information to the MARPOL Annex VI GISIS module in accordance with paragraph 3.4 of these Guidelines.

4.2.4.6 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, in accordance with regulation 18.2.4 of MARPOL Annex VI. 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. In the case that the parties permit a single voyage of a ship, the port State should confirm that the Administration of the ship has advised the authority at the destination port of the approval for a single voyage including information on the ship granted with the approval and the certified record of analysis of the sample as the evidence. Once confirmation has been provided the port State should permit the ship to sail as agreed.

4.2.4.7 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 or a permit under regulation 3.2 of MARPOL Annex VI, 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 in paragraph 4.2.4.5 should be applied.

4.2.5 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 SO_x monitoring.

4.3 Control on fuel oil suppliers

4.3.1 Designated authorities should, if deemed necessary, take a sample and test fuel oils from bunker barges or shore bunker terminals. Sampling of fuel oils in bunker barges or shore bunker terminals can be taken and tested in the same manner that the MARPOL delivered fuel oils are tested by the PSC. All possible efforts should be made to avoid a ship being unduly detained or delayed. If a sample is analysed, sample analysis of fuel oils should not unduly delay the operation, movement or departure of the ship.

4.3.2 If non-compliance, such as issuance of an incorrect BDN or a BDN without measurement of sulphur content, was found, the designated authorities should take appropriate corrective measures against the non-compliant supplier. In such case, the designated authorities should inform the Organization for transmission to the Member States of the non-compliant supplier, in accordance with the regulation 18.9.6 of MARPOL Annex VI and paragraph 4.4 of these Guidelines.

4.4 Information sharing related to non-compliances under MARPOL Annex VI

4.4.1 When a Party finds a non-compliance of a ship or a fuel oil supplier, the information of the non-compliance should be reported to the MARPOL Annex VI GISIS module (regulation 11.4).

4.4.2 Publication of information on non-compliant ships/fuel oil suppliers or a 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/fuel suppliers as a deterrent to non-compliance. Port States also need to report detentions of ships 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.

5 Fuel oil non-availability

5.1 Guidance and information sharing on fuel oil non-availability

5.1.1 Regulation 18.2.1 of MARPOL Annex VI provides that in the event compliant fuel oil cannot be obtained, a Party to MARPOL Annex VI can request evidence outlining the attempts made to obtain the compliant fuel oil, including attempts made to local alternative sources. Regulations 18.2.4 and 18.2.5 then require that the ship notifies its Administration and the competent authority of the port of destination on the inability to obtain compliant fuel oil, with the Party to notify IMO of the non-availability. This notification is commonly referred to as a Fuel Oil Non-Availability Report (FONAR).

5.1.2 Guidance on consistent evidence

5.1.3 Regulation 18.2.1.2 of MARPOL Annex VI requires that evidence be provided to support a claim that all efforts were made to obtain compliant fuel oil. In this regard, a Party may develop more detailed guidance for the consistent use and acceptance of these reports, including what evidence is needed to accompany a report to ensure that port States are applying the provisions under regulation 18.2.3, consistently.

5.1.4 Should a ship, despite its best effort to obtain compliant fuel oil, be unable to do so, the master/company must:

- .1 present a record of actions taken to attempt to bunker correct fuel oil and provide evidence of an attempt 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; and
- .2 best efforts to procure compliant fuel oil include, but are not limited to, investigating alternate sources of fuel oil prior to commencing the voyage. If, despite best efforts, it was not possible to procure compliant fuel oil, the

master/Company must immediately notify the port State Administration in the port of arrival and the flag Administration (regulation 18.2.4 of MARPOL Annex VI).

5.1.5 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.

5.1.6 Investigating non-availability

5.1.7 A Party should investigate the reports of non-availability. This process is important to ensure a consistent supply of compliant fuel to industry, as well as prevent incentives for ships to use ports where it is known that compliant fuel is not available on an ongoing basis. Critical to this process will be the sharing of information between Member States on reported compliant fuel oil supply issues.

5.1.8 Regulation 18.2.5 of MARPOL Annex VI provides that a Party to MARPOL Annex VI notify the Organization when a ship has presented evidence of the non-availability of compliant fuel oil in a port or at their terminal. For this purpose, MARPOL Annex VI GISIS module provides the platform for Parties to upload such notifications.

5.1.9 Regulation 18.1 of MARPOL Annex VI provides that each Party take all reasonable steps to promote the availability of above compliant fuel oil and inform the Organization through MARPOL Annex VI GISIS module of the availability of compliant fuel oils in its ports and terminals.

5.1.10 Port State control authority may contact the submitter (and/or shipowner or operator), including in the event of an incomplete submission, and request additional information, or to pursue an enforcement action such as a Notice of Violation.

5.2 Standard format for reporting fuel oil non-availability

5.2.1 For ships which are unable to purchase fuel oil meeting the requirements of regulations 14.1 or 14.4 of MARPOL Annex VI, the standard format for reporting fuel oil non-availability is set out in appendix 1 to this document, pursuant to regulation 18.2.4 of MARPOL Annex VI.

6 Possible safety implications relating to fuel oils meeting the 0.50% m/m sulphur limit

6.1 MEPC 73 (October 2018) approved MEPC.1/Circ.878 on *Guidance on the development of a ship implementation plan for the consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI* (hereafter the "Ship Implementation Plan Guidance") addresses some safety issues identified with regard to 0.50% maximum sulphur fuel oil, in particular through the section on risk assessment (section 1 of the Ship Implementation Plan Guidance) and additional guidance provided on impact on machinery systems and tank cleaning (appendix 2 and appendix 3 of the Ship Implementation Plan Guidance, respectively).

6.2 Identified potential safety implications include, but are not limited to, the following:

- .1 stability of blended fuel oil;
- .2 compatibility, including new tests and metrics appropriate for future fuels;

- .3 cold flow properties;
- .4 acid number;
- .5 flash point;
- .6 ignition and combustion quality;
- .7 cat fines;
- .8 low viscosity; and
- .9 unusual components.

6.3 Additional technical information and a review, displayed in tabular format, of the possible potential safety implications is set out in appendix 2.

6.4 Reference should also be made to general industry guidance on potential safety and operational issues related to the supply and use of 0.50% maximum sulphur fuels⁸.

⁸ ICS, ASA and ECSA Guidance to shipping companies and crews on preparing for compliance with the 2020 global sulphur limit can be accessed at the following link: <http://www.ics-shipping.org/free-resources/2020-sulphur-compliance>

APPENDIX 1

FUEL OIL NON-AVAILABILITY REPORT (FONAR)

Note:

1 This report is to be sent to the flag Administration and to the competent authorities in the relevant port(s) of destination in accordance with regulation 18.2.4 of MARPOL Annex VI. The report shall be sent as soon as it is determined that the ship/operator will be unable to procure compliant fuel oil and preferably before the ship leaves the port/terminal where compliant fuel cannot be obtained. A copy of the FONAR should be kept on board for inspection for at least 36 months.

2 This report should be used to provide evidence if a ship is unable to obtain fuel oil compliant with the provisions stipulated in regulations 14.1 or 14.4 of MARPOL Annex VI.

3 Before filing a FONAR, the following should be observed by the ship/operator:

3.1 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.

3.2 In the case of insufficiently supported and/or repeated claims of non-availability, the Party may require additional documentation and substantiation of fuel oil non-availability claims. The ship/operator may also be subject to more extensive inspections or examinations while in port.

3.3 Ships/operators are expected to take into account logistical conditions and/or terminal/port policies when planning bunkering, including but not limited to having to change berth or anchor within a port or terminal in order to obtain compliant fuel.

3.4 Ships/operators are expected to prepare as far as reasonably practicable to be able to operate on compliant fuel oils. This could include, but is not limited to, fuel oils with different viscosity and different sulphur content not exceeding regulatory requirements (requiring different lube oils) as well as requiring heating and/or other treatment on board.

1 Particulars of ship

- 1.1 Name of ship: _____
1.2 IMO number: _____
1.3 Flag: _____
1.4 (if other relevant registration number is available, enter here): _____

2 Description of ship's voyage plan

2.1 Provide a description of the ship's voyage plan in place at the time of entry into "country X" waters (and ECA, if applicable) (Attach copy of plan if available):

2.2 Details of voyage:

1 – Last port of departure

2 – First port of arrival in "country X":

3 – Date of departure from last port (dd-mm-yyyy):

4 – Date of arrival at first "country X" (dd-mm-yyyy):

5 – Date ship first received notice that it would be transiting in "country X" waters
(and ECA, if applicable) (dd-mm-yyyy):

6 – Ship's location at the time of notice:

7 – Date ship operator expects to enter "country X" waters (and ECA, if applicable)
(dd-mm-yyyy):

8 – Time ship operator expects to enter "country X" waters (and ECA, if applicable)
(hh:mm UTC):

9 – Date ship operator expects to exit "country X" waters (and ECA, if applicable)
(dd-mm-yyyy):

10 – Time ship operator expects to exit "country X" waters (and ECA, if applicable)
(hh:mm UTC):

11 – Projected days ship's main propulsion engines will be in operation within
"country X" waters (and ECA, if applicable):

12 – Sulphur content of fuel oil in use when entering and operating in "country X"
waters (and ECA, if applicable):

3 Evidence of attempts to purchase compliant fuel oil

3.1 Provide a description of actions taken to attempt to achieve compliance prior to entering "country X" waters (and ECA, if applicable), including a description of all attempts that were made to locate alternative sources of compliant fuel oil, and a description of the reason why compliant fuel oil was not available:

3.2 Name and email address of suppliers contacted, address and phone number and date of contact (dd-mm-yyyy):

Please attach copies of communication with suppliers (e.g. emails to and from suppliers)

4 In case of fuel oil supply disruption only

4.1 Name of port at which ship was scheduled to receive compliant fuel oil:

4.2 Name, email address, and phone number of the fuel oil supplier that was scheduled to deliver (and now reporting the non-availability): _____

5 Operation constraints, if applicable

5.1 If non-compliant fuel has been bunkered due to concerns that the quality of the compliant fuel available would cause operational or safety problems on board the ships, the concerns should be thoroughly documented.

5.2 Describe any operational constraints that prevented use of compliant fuel oil available at port:

5.3 Specify steps taken, or to be taken, to resolve these operational constraints that will enable compliant fuel use:

6 Plans to obtain compliant fuel oil

6.1 Describe availability of compliant fuel oil at the first port-of-call in "country X", and plans to obtain it:

6.2 If compliant fuel oil is not available at the first port-of-call in "country X", list the lowest sulphur content of available fuel oil(s) or the lowest sulphur content of available fuel oil at the next port-of-call:

7 Previous Fuel Oil Non-Availability Reports

7.1 If shipowner/operator has submitted a Fuel Oil Non-Availability Report to "country X" in the previous 12 months, list the number of Fuel Oil Non-Availability Reports previously submitted and provide details on the dates and ports visited while using non-compliant fuel oil, as set out below:

Report: _____
Date (dd-mm-yyyy): _____
Port: _____
Type of fuel: _____
Comments: _____

8 Master/Company information

Master name: _____
Local agent in "country X": _____
Ship operator name: _____
Shipowner name: _____
Name and position of official: _____
Email address: _____
Address (street, city, country, postal/zip code): _____
Telephone number: _____

Signature of Master: _____

Print name: _____
Date (DD/MM/YYYY): _____

APPENDIX 2

TECHNICAL REVIEW OF IDENTIFIED POTENTIAL SAFETY IMPLICATIONS ASSOCIATED WITH THE USE OF 2020 COMPLIANT FUELS

Fuel Property	Potential Challenges	Remarks
Stability	The consequences of a ship receiving an unstable fuel, or one that becomes unstable during storage or handling, can be serious. Sludge may build up in the storage tanks, piping systems or centrifuges and filters can become totally blocked by voluminous amounts of sludge.	<p>The challenge for the fuel producer is to blend a fuel which is not only stable but also has a degree of reserve stability such that it will remain stable during periods of storage and treatment at elevated temperatures.</p> <p>More paraffinic blend components are expected for Very Low Sulphur Fuel Oil (VLSFO) compared to existing fuels. Whereas aromatic components have a stabilizing effect on asphaltenes, paraffins do not. Fuel suppliers are responsible for ensuring that the supplied fuel is stable.</p>
Compatibility issues	Challenges are the same as with stability (above).	<p>An incompatible mix may be harmful to ship's operation.</p> <p>VLSFOs are expected to be paraffinic based in some regions and aromatic based in other regions. There is a risk of experiencing incompatibility when mixing an aromatic fuel with a paraffinic fuel. The same risk exists today, but with the wide range of products which may exist post 2020, it is important to segregate fuels as far as possible and to be cautious of how to manage/handle incompatible fuels on board.</p>
Cold flow properties and Pour Point	ISO 8217:2017 limits the cold flow properties of a fuel through setting a limit on the pour point (PP). However, given that wax crystals form at temperatures above the PP, fuels that meet the specification in terms of PP can still be challenging when operating in colder regions. Wax particles can rapidly block filters, potentially plugging them completely. The paraffin's may crystallize and/or deposit in the storage tanks leading to blockages at the filters and reduced fuel flow to the machinery plants. If fuels are held at temperatures below the pour point, wax will begin to	<p>VLSFO products are expected to be more paraffinic compared to existing fuels. As such, it is important to know the cold flow properties of the bunkered fuel in order to ensure proper temperature management on board.</p> <p>It is important to note that for additives to be effective, they have to be applied before crystallization has occurred in the fuel.</p> <p>Reference 1.</p>

Fuel Property	Potential Challenges	Remarks
	precipitate. This wax may cause blocking of filters and can deposit on heat exchangers. In severe cases the wax will build up in storage tank bottoms and on heating coils, which can restrict the coils from heating the fuel (fuel will become unpumpable from the bunker tanks).	
Acid number	<p>The fuel shall be free from strong, inorganic acids.</p> <p>Fuels with high acid number test results arising from acidic compounds cause accelerated damage to marine diesel engines. Such damage is found primarily within the fuel injection equipment.</p>	<p>There is currently no recognized correlation between an acid number test result and the corrosive activity of the fuel.</p> <p>ISO 8217:2017, appendix E covers the topic.</p>
Flashpoint	Flashpoint is considered to be a useful indicator of the fire hazard associated with the storage of marine fuels. Even if fuels are stored at temperatures below the determined flash point, flammable vapours may still develop in the tank headspace.	SOLAS requirement.
Ignition and combustion quality	Fuels with poor ignition & combustion properties can, in extreme cases, result in serious operational problems, engine damage and even total breakdown. Poor combustion performance is normally characterized by an extended combustion period and/or poor rates of pressure increase and low "p max" resulting in incomplete combustion of the fuel. The resulting effects are increased levels of unburned fuel and soot that may be deposited in the combustion chamber, on the exhaust valves and in the turbocharger system, exhaust after treatment devices, waste heat recovery units and other exhaust system components. Extended combustion periods may also result in exposure of the cylinder liner to high temperatures which may disrupt the lubricating oil film, leading to	<p>High and medium-speed engines are more prone to experience operational difficulties due to poor ignition and combustion properties than low speed two stroke types. With four stroke engines, poor ignition can result in excessive exhaust gas system deposits, black smoke, engine knocking and difficulties operating at low load.</p> <p>If the ignition process is delayed for too long a period by virtue of some chemical quality of the fuel, too large a quantity of fuel will be injected into the engine cylinders and will ignite at once, producing a rapid pressure and heat rise and causing associated damage to the piston rings and cylinder liners of the engine.</p> <p>Reference 2.</p>

Fuel Property	Potential Challenges	Remarks
	increased wear rates and scuffing. Unburnt fuel droplets may also carry over impinging on the liner surfaces causing further risk of damage to the liner.	
Cat fines	Cat fines will cause abrasive wear of cylinder liners, piston rings and fuel injection equipment if not reduced sufficiently by the fuel treatment system. High wear in the combustion chamber can result.	Major engine manufacturers recommend that the fuel's cat fines content does not exceed 10 mg/kg (ppm) at engine inlet.
Low viscosity	<p>Low-viscosity fuels (less than 2 cSt at engine inlet) challenge the function of the fuel pump in the following ways:</p> <ul style="list-style-type: none"> .1 breakdown of the oil film, which could result in seizures; .2 insufficient injection pressure, which results in difficulties during start-up and low-load operation; and .3 insufficient fuel index margin, which limits acceleration. 	<p>Low fuel viscosity does not only affect the engine fuel pumps. Most pumps in the external fuel oil system (supply pumps, circulating pumps, transfer pumps and feed pumps for the centrifuge) also need viscosities above 2 cSt to function properly.</p> <p>Viscosity is highly temperature dependent and the crew must take proper care of fuel oil temperature management to avoid viscosity related issues.</p> <p>Reference 3.</p>
Unusual components	<p>The below components and group of components can be linked to the risk of encountering the following problems:</p> <p>Polymers (e.g. polystyrene, polyethylene, polypropylene) Associated with filter blocking</p> <p>Polymethacrylates Associated with fuel pump sticking</p> <p>Phenols Occasionally Associated with filter blocking/fuel oil pump sticking</p> <p>Tall oils Associated with filter blocking</p> <p>Chlorinated hydrocarbons Associated with fuel pump seizures</p>	<p>Only for few components, there exists a clear cause and effect between component and associated operational problems.</p> <p>There is no statistical study performed of which components are typically found in marine fuels and in which concentration.</p> <p>As per ISO 8217:2017, annex B: The marine industry continues to build on its understanding of the impact of specific chemical species and the respective critical concentrations at which detrimental effects are observed on the operational characteristics of marine fuels in use.</p> <p>Only in some of the past cases the origin of the unusual components found in bunkers were revealed and</p>

Fuel Property	Potential Challenges	Remarks
	<p>Estonian shale oil Associated in the past with excessive separator sludging</p> <p>Organic acids Associated with corrosion as well as fuel pump sticking</p>	<p>were due to various reasons such as:</p> <p>.1 Russia/Baltic states 1997, cross contamination in storage/piping (polypropylene);</p> <p>.2 Singapore 2001, 4 bunker barges received material from road tankers which, in addition to transporting fuel, also collected/transported waste oil from shipyards and motor shops (esters);</p> <p>.3 Ventspils 2007, Estonian shale oil to convert HSHFOs to LSFOS; and</p> <p>.4 Houston 2010/11, bunker barges that were not cleaned between cargoes (polyacrylates) Reference 4.</p>

References

- 1 CIMAC WG7 Fuels Guideline 01/2015: "Cold flow properties of marine fuel oils"
- 2 CIMAC WG7 Fuels 2011: "Fuel Quality Guide: Ignition and Combustion"
- 3 MAN Service Letter SL2014-593/DOJA
- 4 Bureau Veritas Verifuel, Investigative analysis of marine fuel oils: Pros & Cons

ANNEX 15

**RESOLUTION MEPC.321(74)
(adopted on 17 May 2019)**

**2019 GUIDELINES FOR PORT STATE CONTROL
UNDER MARPOL ANNEX VI CHAPTER 3**

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 the international conventions for the prevention and control of marine pollution,

RECALLING ALSO that, at its fifty-eighth session, the Committee adopted, by resolution MEPC.176(58), a revised MARPOL Annex VI which significantly strengthens the controls on emissions,

NOTING that articles 5 and 6 of the MARPOL Convention and regulations 10 and 11 of MARPOL Annex VI provide control procedures to be followed by a Party to the 1997 Protocol with regard to foreign ships visiting its ports,

RECALLING that, at its fifty-ninth session, the Committee adopted, by resolution MEPC.181(59), *2009 Guidelines for port State control under the revised MARPOL Annex VI*,

NOTING that the revised MARPOL Annex VI entered into force on 1 July 2010 and since then there have been several amendments to the provisions,

RECOGNIZING the need to revise the *2009 Guidelines for port State control under the revised MARPOL Annex VI*, in accordance with provisions of the MARPOL Annex VI, as amended,

HAVING CONSIDERED, at its seventy-fourth session, draft 2019 Guidelines for port State control under MARPOL Annex VI prepared by the Sub-Committee on Pollution Prevention and Response, at its sixth session, following a review by the Sub-Committee on Implementation of IMO Instruments, at its fifth session,

1 ADOPTS the *2019 Guidelines for port State control under MARPOL Annex VI Chapter 3* (2019 PSC Guidelines), as set out in the annex to the present resolution;

2 INVITES Governments, when exercising port State control under MARPOL Annex VI, to apply the 2019 PSC Guidelines from 1 January 2020;

3 INVITES Governments, when exercising port State control under MARPOL Annex VI, to apply the provisions of MARPOL Annex VI concerning the prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship from 1 March 2020;

4 INVITES Governments, when exercising port State control under MARPOL Annex VI, to apply the provisions of MARPOL Annex VI concerning electronic record books from 1 October 2020;

5 AGREES to keep these Guidelines under review in the light of experience gained with their application;

6 REVOKES the *2009 Guidelines for port State control under the revised MARPOL Annex VI* adopted by resolution MEPC.181(59), from 1 January 2020.

ANNEX

2019 GUIDELINES FOR PORT STATE CONTROL UNDER MARPOL ANNEX VI CHAPTER 3

Chapter 1 GENERAL

1.1 This document is intended to provide basic guidance on the conduct of port State control inspections for compliance with MARPOL Annex VI (hereinafter referred to as "the Annex") and afford consistency in the conduct of these inspections, the recognition of deficiencies and the application of control procedures.

1.2 Chapters 1 (General), 4 (Contravention and detention), 5 (Reporting requirements) and 6 (Review procedures) of the *Procedures for Port State Control*, as adopted by the Organization, as may be amended, also applies to these Guidelines.

Chapter 2 INSPECTIONS OF SHIPS REQUIRED TO CARRY THE IAPP CERTIFICATE

2.1 Initial inspections

2.1.1 The PSCO should ascertain the date of ship construction and the date of installation of equipment on board which are subject to the provisions of the Annex, in order to confirm which regulations of the Annex are applicable.

2.1.2 On boarding and introduction to the master or responsible ship's officer, the port State control officer (PSCO) should examine the following documents, where applicable:

- .1 the International Air Pollution Prevention Certificate (IAPP Certificate) (regulation VI/6), including its Supplement;
- .2 the Engine International Air Pollution Prevention Certificate (EIAPP Certificate) (paragraph 2.2 of the NO_x Technical Code) including its Supplement, for each applicable marine diesel engine;
- .3 the Technical File (paragraph 2.3.4 of the NO_x Technical Code) for each applicable marine diesel engine;
- .4 depending on the method used for demonstrating NO_x compliance for each applicable marine diesel engine:
 - .1 the Record Book of Engine Parameters for each marine diesel engine (paragraph 6.2.2.7 of the NO_x Technical Code) demonstrating compliance with regulation VI/13 by means of the marine diesel engine parameter check method; or
 - .2 documentation relating to the simplified measurement method; or
 - .3 documentation related to the direct measurement and monitoring method;
- .5 for a ship to which regulation VI/13.5.1 applies for a particular NO_x Tier III emission control area and that has one or more installed marine diesel engines certified to both Tier II and Tier III or which has one or more marine diesel

engines certified to Tier II only¹ that there are the required log book and the recordings for the tier and on/off status of those marine diesel engines while the ship is within an applicable NO_x Tier III emission control area;

- .6 the Approved Method File (regulation VI/13.7);
- .7 the written procedures covering fuel oil change over operations (in a working language or languages understood by the crew) where separate fuel oils are used in order to achieve compliance (regulation VI/14.6);
- .8 the approved documentation relating to exceptions and/or exemptions granted under regulation VI/3;
- .9 the approved documentation (SECC where issued, ETM, OMM, SECP) and relating to any installed Exhaust Gas Cleaning System (EGCS) or equivalent means, to reduce SO_x emissions (regulation VI/4);
- .10 that the required EGCS monitoring records have been retained and show compliance. Additionally, that the EGCS Record Book including nitrate discharge data and performance records,² or approved alternative, has been duly maintained;
- .11 the bunker delivery notes (BDNs) and representative samples or records thereof (regulation VI/18);
- .12 the copy of the type approval certificate of applicable shipboard incinerator (resolutions MEPC.76(40) or MEPC.244(66));
- .13 the Ozone Depleting Substances Record Book (regulation VI/12.6);
- .14 the VOC Management Plan (regulation VI/15.6);
- .15 any notification to the ship's flag Administration issued by the master or officer in charge of the bunker operation together with any available commercial documentation relevant to non-compliant bunker delivery, regulation VI/18.2; and
- .16 if the ship has not been able to obtain compliant fuel oil, the notification to the ship's flag Administration and the competent authority of the relevant port of destination as set out in the appendix.

The Record Books referenced in sub-paragraphs .1, .5, .10 and 13 above may be presented in an electronic format. A declaration from the Administration should be viewed in order to accept this Electronic Record Book. If a declaration cannot be provided, a hard copy Record Book will need to be presented for examination.

¹ Unified Interpretation to regulation 13.5.3 set out in MEPC.1/Circ.795/Rev.4.

² In assessing the Emission Ratio and discharge water records the PSCO should be mindful that such factors as transient engine operation or analyser performance outputs may result in isolated "spikes" in the recorded output which, while these measurements in themselves may be above the required Emission Ratio or discharge water limit values, do not indicate that overall the EGCS was not being operated and controlled as required and hence should not be taken as evidence of non-compliance with the requirements.

2.1.3 As a preliminary check, the IAPP Certificate's validity should be confirmed by verifying that the Certificate is properly completed and signed and that required surveys have been performed.

2.1.4 Through examining the Supplement to the IAPP Certificate, the PSCO may establish how the ship is equipped for the prevention of air pollution.

2.1.5 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.

2.1.6 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.

2.1.7 In all cases, a copy may be retained on board the ship, together with any available commercial documentation, for the subsequent scrutiny of port State control.

2.2 Initial inspection on ships equipped with equivalent means of SO_x compliance.

2.2.1 On ships equipped with equivalent means of compliance, the PSCO will look at:

- .1 evidence that the ship has received an appropriate approval for any installed equivalent means (approved, under trial or being commissioned);
- .2 evidence that the ship is using an equivalent means, as identified on the Supplement of the IAPP certificate, for fuel oil combustion units on board or that compliant fuel oil is used in equipment not so covered; and
- .3 BDNs on board³ which indicate that the fuel oil is intended to be used in combination with an equivalent means of SO_x compliance or the ship is subject to a relevant exemption to conduct trials for SO_x emission reduction and control technology research.

2.2.2 In the case where an EGCS is not in compliance with the relevant requirements for other than transitory periods and isolated spikes in the recorded output, the master or officer in charge 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, and present those corrective actions taken in order to rectify the situation in accordance with the guidance given in the EGCS Technical Manual. If a malfunction occurs in the instrumentation for the monitoring of emission to air or the monitoring of washwater discharge to sea, the ship may have alternative documentation demonstrating compliance.⁴

³ Resolution MEPC.305(73) *Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship* is not applicable to fuel oil carried as cargo or for ships fitted with an approved equivalent means of compliance.

⁴ MEPC.1/Circ.883 on *Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the Exhaust Gas Cleaning Systems (EGCS) fails to meet the provisions of the 2015 EGCS Guidelines (resolution MEPC.259(68))*, ships should have documented notification of system non-compliance to relevant authorities as in paragraph 2.2.2.

2.3 Initial inspection within an ECA

2.3.1 When a ship is inspected in a port in an ECA designated for SO_x emission control, the PSCO should look at:

- .1 evidence of fuel oil delivered to and used on board with a sulphur content of not more than 0.10% m/m through the BDNs and appropriate onboard records including records of bunkering operations as set out in the Oil Record Book Part 1 (regulation VI/18.5 and VI/14.4); and
- .2 for those ships using separate fuel oils for compliance with regulation VI/14, evidence of a written procedure (in a working language or languages understood by the crew) and records of changeover to fuel oil with a sulphur content of not more than 0.10% m/m before entering the ECA such that compliant fuel was being used while sailing in the entire ECA as required in regulation VI/14.6.

2.3.2 When a ship to which regulation VI/13.5.1 applies for a particular NO_x Tier III emission control area is inspected in a port in that area, the PSCO should look at:

- .1 the records in respect of the tier and on/off status, together with any changes to that status while within that NO_x Tier III emission control area, which are to be logged as required by regulation VI/13.5.3 in respect of an installed marine diesel engine certified to both Tier II and Tier III or which is certified to Tier II only⁵; and
- .2 the status of an installed marine diesel engine which is certified to both Tier II and Tier III showing that that engine was operating in its Tier III condition on entry into that NO_x Tier III emission control area and that status was maintained at all times while that marine diesel engine was in operation within that area; or
- .3 the records related to the conditions associated with an exemption granted under regulation VI/13.5.4 have been logged as required by that exemption and that the terms and duration of that exemption have been complied with as required.

2.4 Initial inspection outside an ECA or first port after transiting an ECA

2.4.1 When a ship is inspected in a port outside ECA the PSCO will look to the same documentation and evidence as during inspections in ports inside the ECA. The PSCO should in particular look at:

- .1 evidence that the sulphur content of the fuel oil is in accordance with regulation VI/14.1⁶ through the BDNs and appropriate onboard records including records of bunkering operations as set out in the Oil Record Book Part 1 (regulation VI/18.5 and VI/14.4); and

⁵ Unified Interpretation to regulation 13.5.3 set out in MEPC.1/Circ.795/Rev.4.

⁶ Resolution MEPC.305(73) *Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship* is not applicable to fuel oil carried as cargo or for ships fitted with an approved equivalent means of compliance.

- .2 evidence of a written procedure (in a working language or languages understood by the crew) and records of changeover from fuel oil with a sulphur content of not more than 0.10% m/m after leaving the ECA such that compliant fuel was being used while sailing in the in the entire ECA.

2.4.2 When a ship to which regulation VI/13.5.1 applies for a particular NO_x Tier III emission control area is inspected in a port outside that area, the PSCO should look at the records required by 2.3.2.1 and 2.3.2.2 or 2.3.2.3 to ensure that the relevant requirements were complied with for the whole period of time the ship was operating in that area.

2.5 Outcome of initial inspection

2.5.1 If the certificates and documents are valid and appropriate and, after an inspection of the ship to check that the overall condition of the ship meets generally accepted international rules and standards, the PSCO's general impressions and observations on board confirm a good standard of maintenance, the inspection should be considered satisfactorily concluded.

2.5.2 If, however, the PSCO's general impressions or observations on board give clear grounds (see paragraph 2.5.3) for believing that the condition of the ship or its equipment do not correspond substantially with the particulars of the certificates or the documents, the PSCO should proceed to a more detailed inspection.

2.5.3 "Clear grounds" to conduct a more detailed inspection include:

- .1 evidence that certificates required by the Annex are missing or clearly invalid;
- .2 evidence that documents required by the Annex are missing or clearly invalid;
- .3 the absence or malfunctioning of equipment or arrangements specified in the certificates or documents;
- .4 the presence of equipment or arrangements not specified in the certificates or documents;
- .5 evidence from the PSCO's general impressions or observations that serious deficiencies exist in the equipment or arrangements specified in the certificates or documents;
- .6 information or evidence that the master or crew are not familiar with essential shipboard operations relating to the prevention of air pollution, or that such operations have not been carried out;
- .7 evidence of inconsistency between information in the bunker delivery note and paragraph 2.3 of the Supplement to the IAPP certificate;
- .8 evidence that an equivalent means has not been used as required; or
- .9 evidence, for example by fuel calculators, that the quantity of bunkered compliant fuel oil is inconsistent with the ship's voyage plan; and

- .10 receipt of a report or complaint containing information that the ship appears to be non-compliant including but not limited to information from remote sensing surveillance of SO_x emissions or portable fuel oil sulphur content measurement devices indicating that a ship appears to use non-compliant fuel while in operation/underway;
- .11 evidence that the tier and/or on/off status of applicable installed marine diesel engines has not been maintained correctly or as required;
- .12 receipt of a report or complaint containing information that one or more of the installed marine diesel engines has not been operated in accordance with the provisions of the respective Technical File or the requirements relevant to a particular NO_x Tier III emission control area; and
- .13 receipt of a report or complaint containing information that the conditions attached to an exemption granted under regulation VI/13.5.4 have not been complied with.

2.6 More detailed inspections

2.6.1 The PSCO should verify that:

- .1 there are effectively implemented maintenance procedures for the equipment containing ozone-depleting substances; and
- .2 there are no deliberate emissions of ozone-depleting substances.

2.6.2 In order to verify that each installed marine diesel engine with a power output of more than 130 kW is approved by the Administration in accordance with the NO_x Technical Code and maintained appropriately, the PSCO should pay particular attention to the following:

- .1 examine such marine diesel engines to be consistent with the EIAPP Certificate and its Supplement, Technical File and, if applicable, Record Book of Engine Parameters or Onboard Monitoring Manual and related data;
- .2 examine marine diesel engines specified in the Technical Files to verify that no unapproved modifications, which may affect NO_x emission, have been made to the marine diesel engines;
- .3 in the case of an installed marine diesel engine certified to Tier III that the required records, if applicable, in accordance with regulation VI/13.5.3 or in the Technical File, including those required by 2.3.6 of the NO_x Technical Code, have been maintained as necessary and that the marine diesel engine, including any NO_x control device and associated ancillary systems and equipment, including, where fitted, bypass arrangements, is maintained in accordance with the associated Technical File and is in good order;
- .4 if applicable, examine whether the conditions attached to an exemption granted under regulation VI/13.5.4 have been complied with as required;
- .5 examine marine diesel engines with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 to verify that they are certified, if so required, in accordance with regulation VI/13.7;

- .6 in the case of ships constructed before 1 January 2000, verify that any marine diesel engine which has been subject to a major conversion, as defined in regulation VI/13, has been approved by the Administration; and
- .7 emergency marine diesel engines intended to be used solely in case of emergency are still in use for this purpose.

2.6.3 The PSCO should check and verify whether fuel oil complies with the provisions of regulation VI/14 taking into account appendix VI⁷ of this Annex.

2.6.4 The PSCO should pay attention to the record required in regulation VI/14.6 in order to identify the sulphur content of fuel oil used by the ship depending on the area of trade, or that other equivalent approved means have been applied as required. The fuel oil consumed in and outside the ECA, and that there is enough fuel in compliance with regulation VI/14 to reach the next port destination.

2.6.5 Where EGCS is used, the PSCO should check that it has been installed and operated, together with its monitoring systems, in accordance with the associated approved documentation according to the survey procedures as established in the OMM.

2.6.6 If the ship is equipped with an EGCS as an equivalent means of SO_x compliance, the PSCO should verify that the system is properly functioning, is in operation, there are continuous-monitoring systems with tamper-proof data recording and processing devices,⁸ if applicable and the records demonstrate the necessary compliance when set against the limits given in the approved documentation and applies to relevant fuel combustion units on board. Checking can include but is not limited to: emissions ratio, pH, PAH, turbidity readings as limit values given in ETM-A or ETM-B and operation parameters as listed in the system documentation.

2.6.7 If the ship is a tanker, as defined in regulation VI/2.21, the PSCO should verify that the vapour collection system approved by the Administration, taking into account MSC/Circ.585, is installed, if required under regulation VI/15.

2.6.8 If the ship is a tanker carrying crude oil, the PSCO should verify that there is on board an approved VOC Management Plan.

2.6.9 The PSCO should verify that prohibited materials are not incinerated.

2.6.10 The PSCO should verify that shipboard incineration of sewage sludge or sludge oil in boilers or marine power plants is not undertaken while the ship is inside ports, harbours or estuaries (regulation VI/16.4).

2.6.11 The PSCO should verify that the shipboard incinerator, if required by regulation VI/16.6.1, is approved by the Administration. For these units, it should be verified that the incinerator is properly maintained, therefore the PSCO should examine whether:

- .1 the shipboard incinerator is consistent with the certificate of shipboard incinerator;

⁷ Amendments to MARPOL VI, Appendix VI, *Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8)*, expected to be adopted in Spring 2020 and set out in annex 13 to document MEPC 74/18/Add.1.

⁸ Equivalent emission values for emission abatement methods are 4.3 and 21.7 SO₂ (ppm)/CO₂ (% v/v) for marine fuels with a sulphur content of 0.10 and 0.50 (% m/m) respectively.

- .2 the operational manual, in order to operate the shipboard incinerator within the limits provided in appendix IV to the Annex, is provided; and
- .3 the combustion chamber flue gas outlet temperature is monitored at all times the unit is in operation (regulation VI/16.9).

2.6.12 If there are clear grounds as defined in paragraph 2.5.3, the PSCO may examine operational procedures by confirming that:

- .1 the master or crew are familiar with the procedures to prevent emissions of ozone-depleting substances;
- .2 the master or crew are familiar with the proper operation and maintenance of marine diesel engines, in accordance with their Technical Files or Approved Method file, as applicable, and with due regard for Emission Control Areas for NO_x control;
- .3 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;
- .4 the master or crew are familiar with the correct operation of an EGCS or other equivalent means on board together with any applicable monitoring and recording, and record keeping requirements;
- .5 the master or crew are familiar and have undertaken the necessary fuel oil changeover procedures, or equivalent, associated with demonstrating compliance within an Emission Control Area;
- .6 the master or crew are familiar with the garbage screening procedure to ensure that prohibited garbage is not incinerated;
- .7 the master or crew are familiar with the operation of the shipboard incinerator, as required by regulation VI/16.6, within the limits provided in appendix IV to the Annex, in accordance with its operational manual;
- .8 the master or crew are familiar with the regulation of emissions of VOCs, when the ship is in ports or terminals under the jurisdiction of a Party to the 1997 Protocol to MARPOL 73/78 in which VOCs emissions are to be regulated, and are familiar with the proper operation of a vapour collection system approved by the Administration (in case the ship is a tanker as defined in regulation VI/2.21); and
- .9 the master or crew are familiar with the application of the VOC Management Plan, if applicable.

2.7 Detainable deficiencies

2.7.1 In exercising his/her functions, 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 under the scope of the Annex provided they will be timely addressed. In doing this, the PSCO should be guided by the principle that the requirements contained in the Annex, with respect to the construction, equipment and operation of the ship, are essential for the protection of the marine

environment, the navigational safety or the human health and that departure from these requirements could constitute an unreasonable threat of harm to the mentioned protection aspects and should be avoided.

2.7.2 In order to assist the PSCO in the use of these Guidelines, there follows a list of deficiencies, which are considered, taking into account the provisions of regulation VI/3, to be of such a serious nature that they may warrant the detention of the ship involved:

- .1 absence of valid IAPP Certificate, EIAPP Certificates or Technical Files, if applicable;
- .2 a marine diesel engine, with a power output of more than 130 kW, which is installed on board a ship constructed on or after 1 January 2000, or a marine diesel engine having undergone a major conversion on or after 1 January 2000, which does not conform to its Technical File, or where the required records have not been maintained as necessary or where it has not met the applicable requirements of the particular NO_x Tier III emission control area in which it is operating;
- .3 a marine diesel engine, with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres, which is installed on board a ship constructed on or after 1 January 1990 but prior to 1 January 2000, and an approved method for that engine has been certified by an Administration and was commercially available, for which an approved method is not installed after the first renewal survey specified in regulation VI/13.7.2;
- .4 on ships not equipped with equivalent means of SO_x compliance, based on the methodology of sample analysis in accordance with appendix VI⁹ of MARPOL Annex VI, the sulphur content of any fuel oil being used or carried for use on board exceeds the applicable limit required by regulation VI/14. If the master claims that it was not possible to bunker compliant fuel oil, the PSCO should take into account the provisions of regulation VI/18.2 (see the appendix).
- .5 on ships equipped with equivalent means of SO_x compliance, absence of an appropriate approval for the equivalent means, which applies to relevant fuel combustion units on board. With regard to combustion units not connected to an EGCS, the sulphur content of any fuel oil being used on these combustion units exceeds the limits stipulated in regulation VI/14, taking into account the provisions of regulation VI/18.2 (see the appendix).
- .6 non-compliance with the relevant requirements while operating within an Emission Control Area for SO_x and particulate matter control;
- .7 an incinerator installed on board the ship on or after 1 January 2000 does not comply with requirements contained in appendix IV to the Annex, or the standard specifications for shipboard incinerators developed by the Organization (resolutions MEPC.76(40) and MEPC.244(66)); and

⁹ Amendments to MARPOL VI, appendix VI, Verification procedures for a MARPOL Annex VI fuel oil sample (regulation 18.8.2 or regulation 14.8), expected to be adopted in Spring 2020 and set out in annex13 to document MEPC 74/18/Add.1.

- .8 the master or crew are not familiar with essential procedures regarding the operation of air pollution prevention equipment as defined in paragraph 2.5.12 above.

Chapter 3 INSPECTIONS OF SHIPS OF NON-PARTIES TO THE ANNEX AND OTHER SHIPS NOT REQUIRED TO CARRY THE IAPP CERTIFICATE

3.1 As this category of ships is not provided with the IAPP Certificate, the PSCO should judge whether the condition of the ship and its equipment satisfies the requirements set out in the Annex. In this respect, the PSCO should take into account that, in accordance with article 5(4) of the MARPOL Convention, no more favourable treatment is to be given to ships of non-Parties.

3.2 In all other respects the PSCO should be guided by the procedures for ships referred to in chapter 2 and should be satisfied that the ship and crew do not present a danger to those on board or an unreasonable threat of harm to the marine environment.

3.3 If the ship has a form of certification other than the IAPP Certificate, the PSCO may take such documentation into account in the evaluation of the ship.

APPENDIX

NON-AVAILABILITY OF COMPLIANT FUEL OIL CLAIMED

In case non-availability of compliant fuel oil is claimed the master/owner must present a record of actions taken to attempt to bunker compliant fuel oil and provide evidence:

- .1 of attempts to purchase compliant fuel oil in accordance with its voyage plan;
- .2 if the fuel oil was not made available where expected, that attempts were made to locate alternative sources for such fuel oil; and
- .3 that despite best efforts to obtain compliant fuel oil no such fuel oil was made available for purchase.

Best efforts to procure compliant fuel oil include, but are not limited to, investigating alternative sources of fuel oil prior to commencing the voyage or en route.

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

If the ship provides the information, as above, the port State should take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures.

The master/owner may provide evidence as below to support their claim (not exhaustive):

- .1 a copy (or description) of the ship's voyage plan, including the ship's port of origin and port of destination;
- .2 the time the ship first received notice it would be conducting a voyage involving transit/arrival in the port and the ship's location when it first received such notice;
- .3 a description of the actions taken to attempt to achieve compliance, including a description of all attempts that were made to locate alternative sources of compliant fuel oil, and a description of the reason why compliant fuel was not available (e.g. compliant fuel oil was not available at ports on the "intended voyage", fuel oil supply disruptions at port, etc.);
- .4 the cost of compliant fuel is not considered to be a valid basis for claiming non-availability of fuel;
- .5 include names and addresses of the fuel oil suppliers contacted and the dates on which contact was made;
- .6 in cases of fuel oil supply disruption, the name of the port at which the ship was scheduled to receive compliant fuel oil and the name of the fuel supplier that is reporting the non-availability of compliant fuel oil;
- .7 the availability of compliant fuel oil at the next port-of-call and plans to obtain that fuel oil; and

- .8 if applicable, identify and describe any operational constraints that prevented use of compliant fuel oil, e.g. with respect to viscosity or other fuel oil parameters.

If, despite best efforts, it was not possible to procure compliant fuel oil the master/owner must notify the port State control authorities in the port of arrival and the flag Administration (regulation VI/18.2.4).

ANNEX 16**RESOLUTION MEPC.322(74)**
(adopted on 17 May 2019)**AMENDMENTS TO THE 2018 GUIDELINES ON THE METHOD OF CALCULATION OF
THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS
(RESOLUTION MEPC.308(73))**

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 (the Committee) conferred upon it by international conventions for the prevention and control of marine pollution from ships,

RECALLING ALSO that, at its sixty-second session, it adopted, by resolution MEPC.203(62), *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* (inclusion of regulations on energy efficiency for ships in MARPOL Annex VI),

NOTING that the aforementioned amendments to MARPOL Annex VI entered into force on 1 January 2013,

NOTING ALSO that regulation 20 (Attained Energy Efficiency Design Index (attained EEDI)) of MARPOL Annex VI, as amended, requires that the EEDI shall be calculated taking into account the guidelines developed by the Organization,

NOTING FURTHER the *2012 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, adopted at its sixty-third session by resolution MEPC.212(63), and the amendments thereto, adopted at its sixty-fourth session by resolution MEPC.224(64),

NOTING FURTHER that, at its sixty-sixth session, it adopted, by resolution MEPC.245(66), *2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, and, at its sixty-eighth session, by resolution MEPC.263(68), MEPC.281(70), amendments thereto,

NOTING FURTHER that, at its seventy-three, it adopted, by resolution MEPC.308(73), *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*,

RECOGNIZING that the amendments to MARPOL Annex VI require relevant guidelines for the smooth and uniform implementation of the regulations,

HAVING CONSIDERED, at its seventy-fourth session, proposed amendments to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, as amended

1 ADOPTS amendments to the *2018 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, as amended, as set out in the annex to the present resolution;

2 INVITES Administrations to take the aforementioned amendments into account when developing and enacting national laws which give force to and implement provisions set forth in regulation 20 of MARPOL Annex VI, as amended;

3 REQUESTS the Parties to MARPOL Annex VI and other Member Governments to bring the amendments to the attention of shipowners, ship operators, shipbuilders, ship designers and any other interested parties;

4 AGREES to keep these Guidelines, as amended, under review, in the light of experience gained with their implementation.

ANNEX

AMENDMENTS TO THE 2018 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS (RESOLUTION MEPC.308(73))

- 1 The following text is added after 2.2.18 in the table of "CONTENTS":

"2.2.19 f_m ; Factor for ice-classed ships having IA Super and IA"

- 2 The EEDI Formula in section 2.1 is replaced with the following:

"2.1 EEDI Formula

The attained new ship Energy Efficiency Design Index (EEDI) is a measure of ships' energy efficiency (g/t · nm) and calculated by the following formula:

$$\frac{\left(\prod_{j=1}^n f_j \right) \left(\sum_{i=1}^{nME} P_{ME(i)} \cdot C_{FME(i)} \cdot SFC_{ME(i)} \right) + (P_{AE} \cdot C_{FAE} \cdot SFC_{AE}^*) + \left(\left(\prod_{j=1}^n f_j \right) \cdot \sum_{i=1}^{nPTI} P_{PTI(i)} - \sum_{i=1}^{neff} f_{eff(i)} \cdot P_{AEeff(i)} \right) C_{FAE} \cdot SFC_{AE} \right) - \left(\sum_{i=1}^{neff} f_{eff(i)} \cdot P_{eff(i)} \cdot C_{FME} \cdot SFC_{ME}^{**} \right)}{f_i \cdot f_c \cdot f_l \cdot Capacity \cdot f_w \cdot V_{ref} \cdot f_m}$$

"

- 3 A new section 2.2.19 is added after the existing section 2.2.18 as follows:

"2.2.19 f_m ; Factor for ice-classed ships having IA Super and IA

For ice-classed ships having IA Super or IA, the following factor, f_m , should apply:

$$f_m = 1.05$$

For further information on approximate correspondence between ice classes, see HELCOM Recommendation 25/7*."

* HELCOM Recommendation 25/7 may be found at <http://www.helcom.fi>

ANNEX 17

TERMS OF REFERENCE FOR THE ESTABLISHMENT OF A VOLUNTARY MULTI-DONOR TRUST FUND TO SUSTAIN THE ORGANIZATION'S TECHNICAL COOPERATION AND CAPACITY-BUILDING ACTIVITIES TO SUPPORT THE IMPLEMENTATION OF THE INITIAL IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS ("GHG TC-TRUST FUND")

Establishment and authority of the Trust Fund

1 The "GHG TC-Trust Fund", hereinafter called the "Trust Fund", is established by the Secretary-General under the International Maritime Organization's Financial Regulations 6.7 and 6.8 on [TBD]. The Trust Fund shall be administered in conformity with the Organization's Financial Regulations and Financial Rules. Management of the Trust Fund also requires observance of the Organization's Staff Regulations and Staff Rules, and other policies or procedures promulgated by the Secretary-General. Exceptions to such regulations, rules, policies or procedures are not permissible, unless specifically authorized by the Secretary-General.

Purpose of the Trust Fund

2 The purpose of the Trust Fund is to provide a "dedicated source of financial support for technical co-operation and capacity-building activities to support the implementation of the *Initial IMO Strategy on reduction of GHG emissions from ships*".

Contributions to the Trust Fund

3 The resources of the Trust Fund include:

- .1 voluntary contributions from IMO Member States, UN Agencies, international organizations, and other entities having expressed their support for the objectives and aims of the *Initial IMO Strategy on reduction of GHG emissions from ships*; and
- .2 any income arising from investments/balances of the Trust Fund.

4 A pledge to the Trust Fund may only be accepted by the Director of Administration.

5 Contributions for the Trust Fund may be accepted in United States dollars, Sterling pounds, Euros or other fully convertible currencies. Contributions in currencies which are not convertible may be accepted, but only if the Director of Administration determines that the currency can be fully utilized in the implementation of the related activity. Contributions in kind are given an estimated monetary value by the Director of Administration at the time the pledges are received.

6 The making of a pledge and its acceptance are to be recorded in an exchange of letters, or, if deemed appropriate, in a more formal agreement, meeting minutes or reports.

7 The resources of the Trust Fund shall be kept in the following bank account:

IMO Bank Account details	Account No(s)	Sort-code
[TBD]	[TBD]	[TBD]

8 Contributions will normally be received for the purpose as described in paragraph 2 above. However, individual donors may indicate for which of the technical co-operation and capacity-building activities their contributions are preferably used. If such contribution cannot be used as intended, the donor will be consulted on its appropriate use.

Administration of the Trust Fund and spending authority

9 The Secretary-General designates the Marine Environment Division as the principal implementing office of the Trust Fund, which will be responsible for co-ordinating all aspects of the work programme to be financed from the Trust Fund.

10 In accordance with IMO Financial Regulation 10.2, no obligations or disbursements against any funds may be incurred without the written authorization of the Secretary-General or on his behalf from the Director of Administration. Such authorizations take the form of allotments which will be issued only after sufficient contributions have been received to meet the requirements for initial financial obligations and for any reserves which may be required.

Audit

11 The Trust Fund is subject to audit by the externally appointed auditors and the internal auditor of the Organization, under article XII of the IMO Financial Regulations. No other additional or special audit arrangement shall be made with donors.

Reporting

12 The IMO Financial Services will provide an annual financial statement showing income and expenditures as of 31 December each year with respect to the funds pledged and received.

13 All financial accounts and statements shall be expressed in the Organization's reporting currencies.

14 The Marine Environment Division will regularly report to the Marine Environment Protection Committee on the outcome of specific activities and projects funded through the Trust Fund.

Closure of the Trust Fund

15 The Trust Fund may be terminated when all of the programmes have been satisfactorily completed and agreed upon by all parties concerned.

16 Any other balances remaining at the time the Trust Fund is closed will be disposed of in a manner consistent with the purposes of the Trust Fund and with the Financial Regulations and Financial Rules of the Organization.

APPENDIX

OPERATIONAL PROCEDURES

Preparation of a programme implementation plan

1 A programme implementation document (PID) together with a corresponding cost plan is a prerequisite for the commencement of operations. The identified programme implementing officer will submit to the Contract Manager, for approval, the PID including costing, which represents a detailed budget and a plan of activities, clearly outlining the expected accomplishments and allocation of funds.

2 All cost plans for the Trust Fund, including those for operational activities, must include a provision for support costs at a rate approved by the Director of Administration.

Administration of the Trust Fund

3 For the purpose of ensuring proper financial controls, the [Director, Marine Environment Division], shall be the implementing officer of the Trust Fund.

4 The Contract Manager shall be responsible for ensuring that the Trust Fund is utilized for the purpose as described in these terms of reference and the implementation of programme activities under the Trust Fund.

ANNEX 18

TERMS OF REFERENCE OF THE FOURTH IMO GHG STUDY

Indicative outline

Key definitions

Executive summary

1 *Inventory of GHG emissions from international shipping 2012-2018*

1.1 *Introduction and scope*

The Initial Strategy recalls that the *Third IMO GHG Study 2014* has estimated that GHG emissions from international shipping in 2012 accounted for some 2.2% of anthropogenic CO₂ emissions and that such emissions could grow by between 50% and 250% by 2050.

The *Programme of follow-up actions of the Initial IMO Strategy on reduction of GHG emissions from ships up to 2023* approved by MEPC 73 (MEPC 73/19/Add.1) identified that the Fourth IMO GHG Study should be initiated by MEPC 74 for consideration of its final report at MEPC 76 (Autumn 2020).

MEPC 74 (13 to 17 May 2019) initiated the Fourth IMO GHG Study by adopting its terms of reference.

The Initial Strategy also identifies that future IMO GHG studies would help reduce the uncertainties associated with these emission estimates and scenarios. Therefore, the Fourth IMO GHG Study should aim at reducing these uncertainties, include quantification of these uncertainties, and specify the inherent sources of uncertainties; for example, data integrity, different data sets or inherent difficulties in measurement.

The Fourth IMO GHG Study should be transparent, non-policy-prescriptive, and include the issues below.

The inventory should include current global emissions of GHGs and relevant substances emitted from ships of 100 GT and above engaged in international voyages as follows:

- .1 GHGs should be defined as the six gases initially considered under the UNFCCC process: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆), subject to data availability;
- .2 other relevant substances that may contribute to climate change include:
 - .1 nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), carbon monoxide (CO), particulate matter (PM) and sulphur oxides (SO_x), subject to data availability;
 - .2 Black Carbon (BC), subject to data availability and recognizing the complexity of providing accurate estimates;

- .3 for the purpose of the emission estimates calculation of substances other than CO₂, the emission factors methodology presented in section 2.2.7 of the *Third IMO GHG Study 2014* should be updated; and
- .4 the inventory should include total annual GHG emission¹ series from 2012 to 2018, or as far as statistical data are available.

1.2 *Differentiation between domestic and international voyages*

The definitions set out in the *Third IMO GHG Study 2014* are as follows:

"International shipping: shipping between ports of different countries, as opposed to domestic shipping. International shipping excludes military and fishing vessels. By this definition, the same ship may frequently be engaged in both international and domestic shipping operations. This is consistent with the IPCC 2006 Guidelines."

"Domestic shipping: shipping between ports of the same country, as opposed to international shipping. Domestic shipping excludes military and fishing vessels. By this definition, the same ship may frequently be engaged in both international and domestic shipping operations. This definition is consistent with the IPCC 2006 Guidelines."

The *Third IMO GHG Study 2014* differentiated domestic and international voyages according to ship type and size only. This was partly because the methods to classify port calls and define emissions according to the voyage did not exist at the time the Study was produced. Estimates were made about which type and size categories were most likely to be only undertaking domestic voyages and allocated as domestic shipping emissions, and which types and sizes might undertake a mix of domestic and international voyages and allocated to international shipping emissions.

The Fourth IMO GHG Study should further develop clear and unambiguous definitions and refine methods for differentiation between domestic and international voyages with the aim to exclude domestic voyage from the inventory for "international shipping". This would mitigate the risk of double counting of emissions from ships.

1.3 *Methods and data*

The emission estimate should include a thorough review of the methodology and assumptions used in the inventory forming part of the *Third IMO GHG Study 2014*, including all data set out in table 14 and in annex 2, taking into account work undertaken since publication of the *Third IMO GHG Study 2014*. The review of the methodology and assumptions may be undertaken by the Steering Committee established by MEPC and/or by an expert group, as appropriate.

The emissions inventory is a technical exercise building on the methodology developed under the *Second IMO GHG Study 2009* and *Third IMO GHG Study 2014* and should be based on available data on fleet composition and size as well as on other technical ship particular data.

Analytical work should be based on available fleet and ship particular data, taking into account intellectual property rights as well as other relevant provisions.

¹ Refer to paragraph 3.1.3 of the *Initial IMO Strategy on reduction of GHG emissions from ships* (resolution MEPC.304(72)).

Estimates should be determined by a top-down methodology such as fuel sales and shipping demand, and by a bottom-up (ship activity) methodology. The bottom-up methodology should be subject to data availability and following the methodology and assumptions used in the Second and Third IMO GHG Studies, which should however be complemented with activity data derived from all relevant sources. The bottom-up estimate should be compared with the top down estimate and any discrepancy analysed and explained, as far as possible.

1.4 Outcome

Results should be compared and discussed with the aim of identifying an estimate for GHG emissions from international shipping and from shipping as a whole on an annual basis from 2012 to 2018.

1.5 Estimates of carbon intensity

The Fourth IMO GHG Study should provide estimates of world fleet's CO₂ emissions per transport work², from 2012 to 2018 or as far as statistical data are available, using the outcome of the inventory estimates.

Carbon intensity indicators should be estimated using parameters consistent with the Data Collection System (DCS) as relevant, for the various ship types. Other potential indicators are also suggested to be estimated as far as statistical data are available.

1.6 Emission estimates for the year 2008

As the *Third IMO GHG Study 2014* did not provide any estimate of carbon intensity of shipping for 2008 (baseline year for the levels of ambition identified in the Initial Strategy), the Fourth IMO GHG Study should additionally calculate possible estimates of carbon intensity of international shipping of the year 2008³.

2 Scenarios for future international shipping emissions 2018-2050

2.1 Introduction

The Fourth IMO GHG Study should develop business-as-usual emission scenarios⁴ on the basis of all possible combinations of representative concentration pathways (RCPs) and shared socioeconomic pathways (SSPs), and discuss their plausibility in the light of recent peer reviewed scientific literature and GDP growth projections made by international economic organizations. In addition, the Study should develop business-as-usual emission scenarios on the basis of one or more recent GDP growth projections made by international economic organizations, e.g. OECD.

The Fourth IMO GHG Study should project transport demand and shipping emissions out to 2050.

² Refer to paragraph 3.1.2 of the *Initial IMO Strategy on reduction of GHG emissions from ships* (resolution MEPC.304(72)).

³ The calculation should take into account estimates identified in paragraph 1.5.

⁴ In line with the *Third IMO GHG Study 2014*, "business-as-usual emission scenarios" assume that the current IMO policies on energy efficiency and emissions of ships remain as they are in force at the time of awarding the contract.

2.2 *Methods and data*

In developing future scenarios that affect emissions from international shipping, the Fourth IMO GHG Study should take fully into account the application of relevant adopted IMO regulations and other industry measures to re-evaluate the status of GHG emissions from shipping. Updated Marginal Abatement Cost Curves (MACCs) taking into account recent technology and economic trends in shipping should be developed as a technical information for reference.

2.3 *Outcome*

Results should be compared and discussed with the aim of identifying as far as possible trends for GHG emissions and carbon intensity from international shipping and from shipping as a whole between 2018 and 2050.

Bibliography

Organizational matters

While taking into account relevant new information, the authors should not duplicate existing studies that have already been completed. Therefore, in conducting the Fourth IMO GHG Study, the authors should consult a broad range of reputable organizations, institutions and resources with relevant experience and/or expertise within areas of the terms of reference. The authors should validate the credibility of information obtained. The responsibility for the content of the Study would rest with the authors.

Steering Committee

A Steering Committee should be established by the Committee at its seventy fourth session. The Steering Committee should be geographically balanced (e.g. with reference to the five United Nations regions), and equitably represent developing and developed countries. Relevant stakeholders should also be represented. The Steering Committee established should be of a manageable size and therefore should be as small as possible.

The Steering Committee should:

- .1 act as a focal point for the Committee;
- .2 provide input into the tendering process, using the list of criteria for technical evaluation of tenders set out in appendix, and approve the Study outline;
- .3 conduct an external review of quality assurance and quality control (QA/QC) issues in the final report before it is submitted to MEPC 76, consulting experts chosen by members of the Steering Committee, taking into account suggestions of independent experts and academic and research institutions proposed by Member States and observers; and
- .4 confirm that the Study meets the terms of reference, review and monitor the progress of the Fourth IMO GHG Study.

The Steering Committee should, as far as possible, make decisions by consensus, make all efforts to ensure timely completion of the Fourth IMO GHG Study and undertake most of their work using modern communication methods, e.g. by e-mail and teleconferencing.

Contract and implementation

The IMO Secretariat will be responsible for procuring the services of the contractor(s) by 31 October 2019 and supervising the execution of the Fourth IMO GHG Study.

The International Maritime Organization's (IMO) General Terms and Conditions will be applicable to the contract(s).

If the tenderer intends to subcontract part of the work or to realize the work in cooperation with another partner, full details will have to be given in the bid. Overall responsibility for the work will remain with the contractor(s).

All payments will be made in United States dollars and so quotes should be provided in US dollars. If any currency conversions are required, the rate of exchange will be the official United Nations operational rate applicable on the date of payment.

In line with IMO's General Terms and Conditions, IMO Staff Regulations and Rules, IMO Financial Regulations and Rules and IMO Procurement Policies, contractor(s) and subcontractor(s) should avoid administrator and staff conflicts of interest and should have policies in place that prevent staff, board members, consultants, and management from having financial, commercial or fiduciary conflicts of interest in relation to the development of and provision of services related to the Fourth IMO GHG Study.

Delivery of Fourth IMO GHG Study

The final report of the Fourth IMO GHG Study should be submitted to the seventy-sixth session of the Marine Environment Protection Committee to be held in Autumn 2020.

APPENDIX

LIST OF CRITERIA FOR TECHNICAL EVALUATION OF TENDERS FOR THE FOURTH IMO GHG STUDY

MANDATORY CRITERIA	
<p>A)The tenderer must demonstrate, by including a description of the aggregate expertise of the group and the specific expertise for each scientist, research institute, and/or consultant in the group that the main scientist(s), research institute(s), and/or consultant(s) involved in the work have adequate experience (i.e. a minimum of five years' experience) and knowledge covering the scope of the Study, including relevant research and analytical work such as:</p> <ul style="list-style-type: none"> • estimation of fuel consumption and emissions of GHG and other relevant substances for the international maritime sector; • development of ship emissions inventories; and • modelling of future scenarios related to the above. <p>"Adequate experience" in section A) above means a minimum of five years' experience for the main scientist(s) involved in the work</p> <p>and</p>	Yes / No
<p>B)The tenderer must include relevant research work undertaken by the involved scientist(s) and/or consultants(s) over the last two years.</p> <p>and</p>	Yes / No
<p>C)The project leader should have significant experience (i.e. a minimum of 10 years' experience and a postgraduate degree in a relevant discipline) covering the scope of the Study, including relevant research and analytical work, such as:</p> <ul style="list-style-type: none"> • estimation of fuel consumption and emissions of GHG and other relevant substances for the international maritime sector; • development of ship emissions inventories; and • modelling of future scenarios related to the above. <p>"Significant experience" in section C) above means:</p> <ul style="list-style-type: none"> • a minimum of 10 years' experience; • a postgraduate degree in a relevant discipline 	Yes / No

RATED CRITERIA	Weight %	Score
1. Approach and methodology	Total weight: 40%	
1.1 Tenderer should provide a clear and logical explanation of methodologies for the analysis		
Section 1: Inventory of GHG emissions from international shipping 2012-2018: Does the tenderer clearly explain the methodology (or methodologies, as appropriate) and data and data sources that will be used to achieve the tasks related to Section 1 of the terms of reference of the Fourth IMO GHG Study	8	/10
Section 2: Scenarios for future international shipping emissions 2018-2050: Does the tenderer clearly explain the methodology (or methodologies, as appropriate) and data and data sources that will be used to achieve the tasks related to Section 2 of the terms of reference of the Fourth IMO GHG Study	8	/10
1.2 Tenderer should demonstrate an understanding of the methodological challenges associated with this project and how they will be addressed.		
Section 1: Inventory of GHG emissions from international shipping 2012-2018: Does the tenderer indicate an understanding of uncertainties and include a methodology for analysing them in emissions estimates?	6	/10
Section 1: Inventory of GHG emissions from international shipping 2012-2018: Does the tenderer include a description of proposed methods to compare their inventories with those of the <i>Third IMO GHG Study 2014</i> ?	6	/10
Section 2: Scenarios for future international shipping emissions 2018-2050: Does the tenderer explain how challenges in the design and development of possible trends for GHG emissions and carbon intensity from international shipping and for shipping as a whole between 2018 and 2050 will be considered?	12	/10
2. Assigned individuals	Total weight: 20%	
Tenderer should provide the information and documents listed below:		
2.1 Names and CVs for the main staff involved in the Study, including relevant research work undertaken by the involved scientist(s) and/or consultant(s) over the last two years, and including any sub-contractors	10	/10
<i>Note: incompleteness of this information may limit ability to rate individual experience.</i>		
2.2 Description of team composition, including a statement of the roles and the level of participation for each assigned individual. Individuals may fill more than one role.	10	/10
Criteria: <ul style="list-style-type: none"> Appropriateness of team composition to meet requirements (as set out in section 1. Approach and methodology); and Completeness of information provided 		

3. Proposed schedule and ability to meet timelines	Total weight: 10%	
A detailed work plan outlining the major activities and estimated completion date should be included in the proposal. Criteria: <ul style="list-style-type: none"> For each task, the tenderer has provided a detailed draft working plan, including identification of: <ul style="list-style-type: none"> (a) milestones; and (b) progress reporting; and The tenderer has provided a draft timetable. 	10	/10

4. Overall quality of the proposal	Total weight: 30%	
Is the proposal clear and concise in how the tenderer will fulfil the terms and requirements of the tender as described in the terms of reference of the Fourth IMO GHG Study (as appropriate)?	4.5	/10
Description of interdisciplinary coordination procedures and in-house quality control/management.	4.5	/10
Logic of approach, i.e. does the approach seem to be a logical way of approaching the tasks related to sections 1 and 2 of the terms of reference (as appropriate)?	6	/10
Clear proposed organization chart and lines of responsibility amongst key personnel.	3	/10
Description of a logical sequence of steps involved from project inception to completion and associated resource schedule and understanding of the timescales to realize the objectives of the project.	4.5	/10
Completeness of approach, i.e. does the tenderer fully reflects all aspects as described in the terms of reference of the Fourth IMO GHG Study (as appropriate) with clear, easy to read and well structured and presented proposal documents with appropriate sub-headings, charts, figures, and illustrations.	7.5	/10

Total score overall for rated criteria	Total weight: 100%	/1000
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The following point system should be used as a guide: 10 = excellent; 8 = very good; 6 = good; 5 = average; 4 = just acceptable; 2 = substandard; 0 = wrong or not addressed.

Scoring should be substantiated with comments.

ANNEX 19

**RESOLUTION MEPC.323(74)
(adopted on 17 May 2019)**

**INVITATION TO MEMBER STATES TO ENCOURAGE VOLUNTARY COOPERATION
BETWEEN THE PORT AND SHIPPING SECTORS TO CONTRIBUTE TO REDUCING
GHG EMISSIONS FROM SHIPS**

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,

HAVING ADOPTED resolution MEPC.304(72) on the *Initial IMO Strategy on reduction of GHG emissions from ships* (hereinafter the Initial Strategy),

NOTING that the Initial Strategy calls for the encouragement of port developments and activities globally to facilitate reduction of GHG emissions from shipping, including provision of ship and shoreside/onshore power supply from renewable sources, infrastructure to support supply of alternative low-carbon and zero-carbon fuels, and to further optimize the logistic chain and its planning, including ports,

RECOGNIZING that many ports are already taking action to facilitate the reduction of GHG emissions from ships,

RECOGNIZING ALSO present-day initiatives for increasing cooperation between ports and other actors in the maritime industry in developing actions that aid the reduction of GHG emissions of the maritime transport system,

RECOGNIZING FURTHER the value of capacity building, knowledge sharing and cooperation for all States, including developing countries, particularly least developed countries (LDCs) and small island developing States (SIDS),

HAVING AGREED the need to encourage further cooperation between ports and shipping to facilitate the reduction of GHG emissions from ships and the value of collaboration,

1 INVITES Member States to promote the consideration and adoption by ports within their jurisdiction, of regulatory, technical, operational, and economic actions to facilitate the reduction of GHG emissions from ships. Those could include but are not limited to the provision of: (a) Onshore Power Supply* (preferably from renewable sources); (b) safe and efficient bunkering of alternative low-carbon and zero-carbon fuels; (c) incentives promoting sustainable low-carbon and zero-carbon shipping; and (d) support for the optimization of port calls;

2 INVITES Member States to facilitate the uptake of actions such as those identified in paragraph 1 through appropriate actions, which may include:

- .1 supporting the viability of business cases for ship and in-port renewable power-to-ship solutions and the use of these solutions;

* Refer to MEPC.1/Circ.794 and further guidelines concerning the safe operation of onshore power supply under development by the Maritime Safety Committee.

- .2 encouraging cooperation between ports, bunker suppliers, shipping companies and all relevant levels of authority in addressing the supply and availability of alternative low-carbon and zero-carbon fuels, including the legal, regulatory and infrastructural barriers to the efficient and safe handling and bunkering of alternative low-carbon and zero-carbon fuels;
- .3 promoting incentive schemes that address GHG emissions and sustainability of international shipping and encouraging more incentive providers and shipping companies to join these; and
- .4 supporting the industry's collective efforts to improve quality and availability of data and develop necessary global digital data standards that would allow reliable and efficient data exchange between ship and shore as well as enhanced slot allocation policies thereby optimizing voyages and port calls and facilitating just-in-time arrival of ships;

3 INVITES ALSO Member States and international organizations to support collaboration, capacity building and sharing of best practices through initiatives that bring together relevant stakeholders such as the GloMEEP project and its Global Industry Alliance to Support Low Carbon Shipping, and the Global MTTC Network (GMN);

4 INVITES FURTHER Member States and international organizations to bring to the attention of the Committee successful examples, including results, of initiatives taken in relation to port developments and activities to facilitate the reduction of GHG emissions from ships;

5 REQUESTS Member States and international organizations to bring this resolution to the attention of port authorities, port and terminal operators, shipowners, ship operators, cargo handling and maritime service providers and other interested groups.

ANNEX 20

TERMS OF REFERENCE FOR THE IMO STUDY ON MARINE PLASTIC LITTER FROM SHIPS

Taking into account the work of, inter alia, GESAMP, FAO, UN Environment, Regional Fisheries Management Organizations, the London Convention and Protocol governing bodies, Regional Seas Programmes and Conventions and other intergovernmental and regional organizations, and especially recognizing the limited knowledge on plastic litter generated from fishing vessels, the IMO Study on Marine Plastic Litter from Ships should include the issues below:

- .1 Estimate the contribution to marine plastic litter (macro and microplastics) by all ships (including fishing vessels) and identify any knowledge gaps in determining this contribution.
- .2 Provide, where possible, a variety of analyses and visualizations (e.g. by ship type, ship size, geographical region/location, volumes, sources and potential marine plastic litter streams including, but not limited to, fishing gear or containers lost at sea) in relation to the estimates in paragraph 1 above.
- .3 With regard to storage, delivery and reception of plastic waste from ships:
 - .1 assess reuse and recycling technologies and schemes for plastic waste from ships, including handling of segregated plastic waste, and any potential obstacles (e.g. management of quarantine waste) to the implementation of such schemes;
 - .2 assess the available port reception facility inadequacies, determine if any of them relate to handling of plastics (including recycling) and identify their key themes;
 - .3 review various pricing frameworks, cost recovery and other relevant incentive schemes (regional, national, port-specific) for the use of reception facilities by ships, including fishing vessels, to assess and compare the efficacy of incentives in reducing marine plastic litter;
 - .4 review best practices of port waste management plans to identify their role in achieving adequacy of port reception facilities, as regards the management of plastic waste;
 - .5 assess the volume and types of marine plastic litter being collected during fishing operations and how it is being managed, including its disposal (e.g. whether it is being disposed of at reception facilities); and
 - .6 review best practices of ships' plastic waste management, including source reduction and alternative materials, to identify their role in reducing marine plastic litter, including achieving effective delivery of plastic waste to reception facilities.

ANNEX 21

SCOPE OF WORK OF THE PPR, III AND HTW SUB-COMMITTEES IN RELATION TO MARINE PLASTIC LITTER FROM SHIPS

PPR Sub-Committee (from PPR 7)

- 1 Preparation of an MEPC circular reminding IMO Member States to collect information from their registered fishing vessels regarding any discharge or accidental loss of fishing gear, in accordance with MARPOL Annex V.
- 2 Preparation of an MEPC circular, in cooperation with III as necessary, to encourage Member States to effectively implement their obligation to provide adequate facilities at ports and terminals for the reception of garbage, as required by regulation 8 of MARPOL Annex V.
- 3 Preparation of an MEPC circular to:
 - .1 encourage Member States and international organizations that have conducted any research related to marine litter to share the results of such research, including any information on the areas contaminated by marine litter from ships; and
 - .2 Invite Member States and international organizations to undertake studies to better understand microplastics from ships and share the results of such studies.
- 4 Review the application of placards, garbage management plans and garbage record-keeping (regulation 10, MARPOL Annex V), and advise the Committee on of potential ways of strengthening the efficacy of the requirements in reducing the generation marine plastic litter from ships.
- 5 Consider ways to promote the work of IMO to address marine plastic litter from ships.
- 6 Consider proposals on how the model course "Marine Environmental Awareness 1.38" could be amended/revised to specifically address marine plastic litter.
- 7 Consider whether and how to amend MARPOL Annex V and the *2017 Guidelines for the implementation of MARPOL Annex V* (resolution MEPC.295(71)), as appropriate, to facilitate and enhance reporting of the accidental loss or discharge of fishing gear, as currently provided in regulation 10.6 of MARPOL Annex V; and clarify the types of fishing gear to be reported.

(4 sessions)

III Sub-Committee (from III 7)

- 8 Consider action 8 of the *Action Plan to address marine plastic litter from ships* (resolution MEPC.310(73)) and advise the Committee on progress (2 sessions).
- 9 Consider proposals for enhancing the enforcement of MARPOL Annex V, including, where possible, through a risk-based approach, and if appropriate prepare draft amendments to the PSC procedures (2 sessions).

HTW Sub-Committee (from HTW 7)

10 Consider, under the existing output 1.22 (Comprehensive review of the 1995 STCW-F Convention), the introduction of provisions in STCW-F Convention to ensure that all fishing vessel personnel receive appropriate training on marine environmental awareness focused on marine plastic litter and abandoned, lost or otherwise discarded fishing gear, and report to MEPC on completion (2 sessions).

HTW Sub-Committee (from the session at which the next comprehensive review of the 1978 STCW Convention is initiated)

11 Consider, at the next comprehensive review of the 1978 STCW Convention, as amended, strengthening the environmental training provisions to explicitly address the management of onboard plastics and marine plastic litter, and report to MEPC on progress (2 sessions).

ANNEX 22

BIENNIAL AGENDA OF THE PPR SUB-COMMITTEE FOR THE 2020-2021 BIENNIUM

Reference to SD, if applicable	Output No.	Description ¹	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Target completion year
1. Improve implementation	1.12	Review of the 2015 Guidelines for exhaust gas cleaning systems (resolution MEPC.259(68))	MEPC		PPR	2020
1. Improve implementation	1.14	Revised guidance on ballast water sampling and analysis	MEPC		PPR	2021
1. Improve implementation	1.15	Revised guidance on methodologies that may be used for enumerating viable organisms	MEPC		PPR	2021
1. Improve implementation	1.17	Development of guidelines for onboard sampling of fuel oil not in use by the ship	MEPC		PPR	2020
1. Improve implementation	1.26	Revision of MARPOL Annex IV and associated guidelines to introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants	MEPC		PPR/III/HTW	2021
1. Improve implementation	1.[...]²	Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))	MEPC		PPR	2021

¹ Outputs printed in bold have been selected for the draft provisional agenda for PPR 7.

² Included from the post-biennial agenda.

Reference to SD, if applicable	Output No.	Description ¹	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Target completion year
1. Improve implementation	1.[...] ³	Evaluation and harmonization of rules and guidance on the discharge of liquid effluents from EGCS into waters, including conditions and areas	MEPC		PPR	2021
2. Integrate new and advancing technologies in the regulatory framework	2.3	Amendments to the IGF Code and development of guidelines for low-flashpoint fuels	MSC	CCC	HTW / PPR / SDC / SSE	2019
Note: A decision on whether output 2.3 will be kept in the 2020-2021 biennial agenda of the PPR Sub-Committee will depend on the outcome of CCC 6 and MSC 102.						
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	MEPC		PPR	2020
2. Integrate new and advancing technologies in the regulatory framework	2.18	Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI	MEPC		PPR	2020
2. Integrate new and advancing technologies in the regulatory framework	2.19	Amendment of annex 1 to the AFS Convention to include controls on cybutryne, and consequential revision of relevant guidelines	MEPC	PPR	PPR	2020
2. Integrate new and advancing technologies in	2.[...] ⁴	Development of amendments to MARPOL Annex VI and the NO_x Technical Code on the use of multiple	MEPC		PPR	2021

³ New output approved by MEPC 74.

⁴ Included from the post-biennial agenda.

Reference to SD, if applicable	Output No.	Description ¹	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Target completion year
the regulatory framework		engine operational profiles for a marine diesel engine				
3. Respond to climate change	3.3	Reduction of the impact on the Arctic of Black Carbon emissions from international shipping	MEPC		PPR	2021
4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to address marine plastic litter from ships	MEPC		PPR/III/HTW	2021
6. Ensure regulatory effectiveness	6.1	Unified interpretation of provisions of IMO safety, security, and environment-related conventions	MSC / MEPC		III / PPR / CCC / SDC / SSE / NCSR	Continuous
6. Ensure regulatory effectiveness	6.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	MEPC		PPR	Continuous
6. Ensure regulatory effectiveness	6.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	MEPC		PPR	2020
OW. Other work	OW.10	Measures to harmonize port State control (PSC) activities and procedures worldwide	MSC / MEPC	III	HTW / PPR / NCSR	Continuous

OUTPUTS ON THE COMMITTEE'S POST-BIENNIAL AGENDA THAT FALL UNDER THE PURVIEW OF THE SUB-COMMITTEE

SUB-COMMITTEE ON POLLUTION PREVENTION AND RESPONSE								
ACCEPTED POST-BIENNIAL OUTPUTS				Parent organ(s)	Associated organ(s)	Coordinating organ	Timescale (sessions)	Reference
No.	Biennium⁵	Reference to strategic direction, if applicable	Description					
1	2018-2019	1. Improve implementation	Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))	MEPC	PPR		2	MEPC 72/17, para.15.8
2	2018-2019	1. Improve implementation	Development of an operational guide on the response to spills of Hazardous and Noxious Substances (HNS)	MEPC	PPR		2	MEPC 74/18, para. 14.20
3	2018-2019	2. Integrate new and advancing technologies in the regulatory framework	Development of amendments to MARPOL Annex VI and the NO _x Technical Code on the use of multiple engine operational profiles for a marine diesel engine	MEPC	PPR		2	MEPC 73/19, para.15.18
4	2018-2019	6. Ensure regulatory effectiveness	Development of necessary amendments to MARPOL Annexes I, II, IV, V and VI to allow States with ports in the Arctic region to enter into regional arrangements for port reception facilities (PRFs)	MEPC	PPR		2	MEPC 74/18, para. 14.18

⁵ Biennium when the output was placed on the post-biennial agenda.

ANNEX 23

PROVISIONAL AGENDA FOR PPR 7

Opening of the session

- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code
- 4 Revised guidance on ballast water sampling and analysis
- 5 Revised guidance on methodologies that may be used for enumerating viable organisms
- 6 Amendment of annex 1 to the AFS Convention to include controls on cybutryne, and consequential revision of relevant guidelines
- 7 Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))
- 8 Reduction of the impact on the Arctic of Black Carbon emissions from international shipping
- 9 Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI
- 10 Development of guidelines for onboard sampling of fuel oil not in use by the ship
- 11 Review of the 2015 Guidelines for Exhaust Gas Cleaning Systems (resolution MEPC.259(68))
- 12 Evaluation and harmonization of rules and guidance on the discharge of liquid effluents from EGCS into waters, including conditions and areas
- 13 Development of amendments to MARPOL Annex VI and the NO_x Technical Code on the use of multiple engine operational profiles for a marine diesel engine
- 14 Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters
- 15 Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book
- 16 Revision of MARPOL Annex IV and associated guidelines to introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants
- 17 Follow-up work emanating from the Action Plan to address marine plastic litter from ships

- 18 Unified interpretation to provisions of IMO environment-related conventions
- 19 Biennial agenda and provisional agenda for PPR 8
- 20 Election of Chair and Vice-Chair for 2021
- 21 Any other business
- 22 Report to the Marine Environment Protection Committee

ANNEX 24

STATUS REPORT OF THE OUTPUTS OF MEPC FOR THE 2018-2019 BIENNIUM

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.2	Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP	Continuous	TCC	MSC / MEPC / FAL / LEG		Ongoing	Ongoing	MEPC 72/17, section 12; MEPC 73/19, section 13; and MEPC 74/18, section 12
1. Improve implementation	1.3	Validated model training courses	Continuous	MSC / MEPC	III / HTW / PPR / CCC / SDC / SSE / NCSR		Ongoing	Ongoing	MSC 100/20, paras. 10.3 to 10.6 and 17.25
1. Improve implementation	1.4	Analysis of consolidated audit summary reports	Annual	Assembly	MSC / MEPC / LEG / TCC / III	Council	Completed	Postponed	MEPC 72/17, para. 2.8.2; C 120/D, paras. 7.1 and 7.2; and MEPC 74/18, para.11.3
1. Improve implementation	1.5	Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)	Annual	MSC / MEPC	III		Completed	Postponed	MEPC 72/17, para. 2.7.5; and MEPC 74/18, para.11.3
1. Improve implementation	1.7	Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation	Annual	TCC	MSC / MEPC / FAL / LEG		Completed	Completed	MEPC 72/17, section 12; MEPC 73/19, section 13; and MEPC 74/18, section 12

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.9	Report on activities within the ITCP related to the OPRC Convention and the OPRC-HNS Protocol	Annual	TCC	MEPC		Completed	Completed	MEPC 72/17, section 12; MEPC 73/19, section 13; and MEPC 74/18, section 12
1. Improve implementation	1.11	Revised guidelines for the application of MARPOL Annex I requirements to FPSOs and FSUs	2019	MEPC	PPR		Completed		MEPC 70/18, para. 15.5; PPR 5/24, section 14, para. 24.2.15 and annex 11; and MEPC 73/19, para. 11.15 and annex 14
1. Improve implementation	1.12	Review of the 2015 Guidelines for exhaust gas cleaning systems (resolution MEPC.259(68))	2019	MEPC	PPR		In progress	Extended	MEPC 69/21, paras. 19.4 and 19.5; PPR 5/24, section 11; MEPC 73/19, paras. 5.10 to 5.13; and MEPC 74/18, paras.5.33 and 14.12
Note: MEPC 74 extended the TCY to 2020 based on the request by PPR 6 (PPR 6/20, para. 11.22)									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.13	Guide on practical methods for the implementation of the OPRC Convention and the OPRC-HNS Protocol	2019	MEPC	PPR		In progress	Completed	MEPC 70/18, para. 15.7; and PPR 5/24, section 17; PPR 6/20, section 15 and annex 17; and MEPC 74/18, para. 26
1. Improve implementation	1.14	Revised guidance on ballast water sampling and analysis	2019	MEPC	PPR	III	In progress	Extended	MEPC 68/21, paras. 7.14 and 17.26; MEPC 70/18, para. 4.47; MEPC 71/17, para. 4.45; PPR 5/24, section 5; MEPC 72/17, para. 4.54; PPR 6/20, section 4 and annex 7; and MEPC 74/18, paras. 4.35 to 4.36
Note: MEPC 74 extended the TCY to 2021, having agreed to refer documents MEPC 74/4/10 and MEPC 74/INF.17 to PPR 7									
1. Improve implementation	1.15	Revised guidance on methodologies that may be used for enumerating viable organisms	2019	MEPC	PPR		In progress	Extended	MEPC 71/17, para. 4.54; and PPR 5/24, section 6; PPR 6/20 para. 5.4; and MEPC 74/18, para.14.25
Note: MEPC 74 extended the TCY to 2021 based on the request by PPR 6 (PPR 6/20, para. 5.4)									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.16	Updated IMO Dispersant Guidelines (part IV)	2019	MEPC	PPR		Completed		PPR 4/21, section 13; and PPR 5/24, section 16, paras. 24.2.16 to 24.2.17 and annex 12; and MEPC 73/19, para.11.16.
1. Improve implementation	1.17	Consistent implementation of regulation 14.1.3 of MARPOL Annex VI	2019	MEPC	PPR		In progress	Extended	MEPC 71/17, para. 14.27; PPR 5/24, section 13; MEPC 72/17, paras. 5.2 to 5.11, 5.41 to 5.43, and annex 10; MEPC 73/19, paras. 5.17 to 5.36; PPR 6/20 section 8 and annexes 10 to 16 and 18; and MEPC 74/18, section 5, para. 14.25 and annexes 11 to 15.
Note: MEPC 74 extended the TCY to 2020 and renamed the output as "Development of guidelines for onboard sampling of fuel oil not in-use by the ship" based on the request by PPR 6 (PPR 6/20, para. 8.77 and MEPC 74/18, para.14.25)									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.18	Measures to ensure quality of fuel oil for use on board ships	2019	MEPC			In progress	Extended	MEPC 72/17, paras. 5.12 to 5.18 and 5.44 to 5.45; MEPC 73/19, paras. 5.37 to 5.41, and paras. 5.76 and 5.77; and MEPC 74/18, section 5
1. Improve implementation	1.24	Revision of certification requirements for SCR systems under the NO _x Technical Code 2008	2018	MEPC	PPR		Completed		MEPC 70/18, para. 15.15; MEPC 71/17, paras. 5.8 and 14.31, and resolution MEPC.291(71); PPR 5/24, section 10, paras. 24.2.10/11 and annexes 8 and 9; MEPC 73/19, paras. 5.7 to 5.9
1. Improve implementation	1.25	Guidelines for the discharge of exhaust gas recirculation bleed-off water	2018	MEPC	PPR		Completed		MEPC 71/17, paras 5.4 to 5.7; PPR 5/24, section 9, paras. 24.2.8 to 24.2.9 and annex 7; and MEPC 73/19, paras. 5.4 to 5.6, 5.77 and annex 3

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
1. Improve implementation	1.26	Amendments to the 2012 Guidelines on implementation of effluent standards and performance tests for sewage treatment plants (resolution MEPC.227(64)) to address inconsistencies in their application	2020	MEPC	PPR		No work undertaken	In progress	MEPC 71/17, paras.14.8 and 14.9; MEPC 72/17, para.15.10; MEPC 73/19, para. 15.19; and MEPC 74/18, para. 14.5
Notes: MEPC 74 agreed to expand the scope of the existing output 1.26 and amend the title of the output to read "Revision of MARPOL Annex IV and associated guidelines to introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants".									
1. Improve implementation	1.27	Review of the BWM Convention based on data gathered in the experience-building phase	2023	MEPC				In progress	MEPC 73/19, para. 15.10.2; and MEPC 74/18, paras. 4.2 to 4.6 and 4.51.
1. Improve implementation	1.28	Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention	2023	MEPC				In progress	MEPC 73/19, para. 15.10.3; and MEPC 74/18, paras. 4.27 and 4.60
2. Integrate new and advancing technologies in the regulatory framework	2.2	Approved ballast water management systems which make use of Active Substances, taking into account recommendations of the GESAMP-BWWG	Annual	MEPC			Completed	Completed	MEPC 72/17, section 4; MEPC 73/19, section 4; and MEPC 74/18, section 4

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	2019	MEPC	PPR		In progress	Extended	MEPC 70/18, para. 15.12; PPR 5/24, section 15; and MEPC 74/18, para. 14.25
Note: MEPC 74 extended the TCY to 2020 based on the request by PPR 6 (PPR 6/20, para. 11.22)									
2. Integrate new and advancing technologies in the regulatory framework	2.14	Amendments to regulation 14 of MARPOL Annex VI to require a dedicated sampling point for fuel oil	2019	MEPC	SSE	PPR	In progress	Extended	MEPC 70/18, para. 15.10; PPR 5/24, section 12; and PPR 6/20, sections 8 and 9
2. Integrate new and advancing technologies in the regulatory framework	2.17	Consideration of development of goal-based ship construction standards for all ship types	2018	MSC / MEPC			No work requested by MSC	Extended	MSC 100/20, section 6
2. Integrate new and advancing technologies in the regulatory framework	2.18	Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI	2019	MEPC	PPR		In progress	Extended	MEPC 70/17, para. 15.17; PPR 5/24, section 8; MEPC 72/17, para. 15.10; PPR 6/20, section 10; and MEPC 74/18, para. 15.25

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
2. Integrate new and advancing technologies in the regulatory framework	2.19	Amendment of annex 1 to the AFS Convention to include controls on cybutryne, and consequential revision of relevant guidelines	2020	MEPC	PPR		In progress	In progress	MEPC 71/17, para. 14.3; PPR 5/24, section 19 and para. 24.2.25; MEPC 73/19, paras. 15.12 to 15.15; PPR 6/20, section 6; and MEPC 74/18, paras. 10.12 to 10.21
3. Respond to climate change	3.1	Treatment of ozone-depleting substances used by ships	Annual	MEPC			Completed	Completed	MEPC 72/17, paras. 5.19 and 5.20; and MEPC 74/18, para. 5.75 to 5.76
3. Respond to climate change	3.2	Further development of mechanisms needed to achieve the limitation or reduction of CO2 emissions from international shipping	Annual	MEPC			Completed	Completed	MEPC 72/14, sections 6 and 7, and annex 11; MEPC 73/19, sections 6 and 7, and annex 9; and MEPC 74/18, sections 6 and 7, annexes 17 to 19.

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
3. Respond to climate change	3.3	Impact on the Arctic of emissions of black carbon from international shipping	2019	MEPC	PPR		In progress	Extended	MEPC 71/17, para. 5.3; PPR 5/24, section 7 and para. 24.2.7; MEPC 73/19, para. 5.3; PPR 6/20, section 6; and MEPC 74/18, paras. 5.61 to 5.67
Notes: MEPC 74 implicitly agreed to expand the TCY to 2020, having instructed PPR 7 to further the draft terms of reference on reducing the impact on the Arctic of Black Carbon emissions from international shipping, as set out in document MEPC 74/10/8.									
3. Respond to climate change	3.4	Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships	2019	MEPC			In progress	Extended	MEPC 72/17, section 12; MEPC 73/19, section 13; and MEPC 74/18, sections 7 and 12
3. Respond to climate change	3.5	Revision of guidelines concerning EEDI and SEEMP	2019	MEPC			In progress	Extended	MEPC 72/17, sections 5 and 6; MEPC 73/19, sections 5 and 6; and MEPC 74/18, sections 5 and 6

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
3. Respond to climate change	3.6	EEDI reviews required under regulation 21.6 of MARPOL Annex VI	2019	MEPC			In progress	Extended	MEPC 72/17, paras. 5.24 to 5.33, 3.50 to 3.51, and annex 6; MEPC 73/19, section 5 and annexes 5, 6 and 7; and MEPC 74/19, section 5
3. Respond to climate change	3.7	Further technical and operational measures for enhancing the energy efficiency of international shipping	2019	MEPC			In progress	Extended	MEPC 72/17, section 6; MEPC 73/19, section 6; and MEPC 74/19, section 6
4. Engage in ocean governance	4.1	Identification and protection of Special Areas, ECAs and PSSAs	Continuous	MEPC	NCSR		Ongoing	Ongoing	MEPC 72/17, section 8; MEPC 73/19, section 10; and MEPC 74/18, section 9
4. Engage in ocean governance	4.2	Input to the ITCP on emerging issues relating to sustainable development and achievement of the SDGs	2019	TCC	MSC / FAL / LEG / MEPC		In progress	Completed	MEPC 72/17, section 12; MEPC 73/19, section 13; MEPC 74/18, section 12

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to address marine plastic litter from ships	2020	MEPC	PPR		In progress	In progress	MEPC 72/17, paras. 15.2 to 15.6; MEPC 73/19, section 8 and annex 10; and MEPC 72/14, section 8 and annex 21
6. Ensure regulatory effectiveness	6.1	Unified interpretation of provisions of IMO safety, security and environment-related conventions	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR		Ongoing	Ongoing	MEPC 71/17, para. 4.80, 5.22, 9.10, 10.7 and annexes 8 and 20; PPR 5/24, section 20; MEPC 72/17, paras 3.10 to 3.13, 3.56 to 3.57 and annex 9; MEPC 73/19, paras. 4.27 to 4.29, 5.14 to 5.16, 6.8 to 6.9, 6.16 and 15.8, and annex 8; and MEPC 74/18, paras. 4.11 to 4.14, and 5.60

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
6. Ensure regulatory effectiveness	6.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	Continuous	MEPC	PPR		Ongoing	Ongoing	MEPC 71/17, para. 9.3 to 9.5; PPR 5/24, section 3; MEPC 72/17, para. 9.4; and MEPC 73/19, paras. 11.5 to 11.7, and annex 11; and MEPC 74/18, paras. 3.19 to 3.28 and annex 7
6. Ensure regulatory effectiveness	6.4	Lessons learned and safety issues identified from the analysis of marine safety investigation reports	Annual	MSC / MEPC	III		Completed	Completed	III 5/15, section 4
6. Ensure regulatory effectiveness	6.5	Identified issues relating to the implementation of IMO instruments from the analysis of PSC data	Annual	MSC / MEPC	III		Completed	Completed	III 5/15, section 6
6. Ensure regulatory effectiveness	6.7	Consideration and analysis of reports on alleged inadequacy of port reception facilities	Annual	MEPC	III		Completed	Completed	III 5/15, section 3; and MEPC 73/19, paras. 8.3 and 8.11; MEPC 74/18, paras. 4.33, 4.34 and 8.22
6. Ensure regulatory effectiveness	6.8	Monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships	Annual	MEPC			Completed	Completed	MEPC 72/17, paras. 5.21 to 5.23; and MEPC 74/18, paras. 5.52 to 5.56

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
6. Ensure regulatory effectiveness	6.10	Review of MARPOL Annex II requirements that have an impact on cargo residues and tank washings of high viscosity, solidifying and persistent floating products and associated definitions, and preparation of amendments	2019	MEPC	PPR		Completed		PPR 4/21, section 4; PPR 5/24, section 4; and MEPC 73/19, paras. 11.10 to 11.12, and annex 13
6. Ensure regulatory effectiveness	6.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	2019	MEPC	PPR		In progress	Extended	MEPC 71/17, para. 14.13; MEPC 72/17, section 11; MEPC 73/19, section 9; PPR 6/20, section 12; and MEPC 74/18, paras. 10.22 to 10.25
Note: MEPC 74 extended the TCY to 2020 based on the request by PPR 6 (PPR 6/20, para. 12.32)									

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
6. Ensure regulatory effectiveness	6.13	Use of electronic record books	2018	MEPC	PPR		In progress	Completed	FAL.5/Circ.39/Rev.2; FAL 40/19, paras. 6.18 to 6.21; MEPC 70/18, para. 2.2; PPR 5/24, section 18 and paras. 24.2.18 to 24.2.23; MEPC 73/19, paras. 11.17 to 11.32, and annexes 4, 6 and 15; and MEPC 74/18, section 3 and annexes 1, 3, 5 and 6
6. Ensure regulatory effectiveness	6.15	Role of the human element	Continuous	MSC / MEPC	III / PPR / CCC / SDC / SSE / NCSR	HTW	Ongoing	Ongoing	MSC 89/25, paras. 10.10, 10.16 and 22.39; and annex 21; MSC 100/20, para. 10.8

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
7. Ensure organizational effectiveness	7.1	Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GISIS, websites, etc.)	Continuous	Council	MSC / MEPC / FAL / LEG / TCC		Ongoing	Ongoing	MEPC 72/17, para. 16.22; MEPC 73/19, paras. 5.64 to 5.70, 6.1 to 6.5, and 11.4; and MEPC 74/18, paras. 4.3 to 4.5, 4.33 to 4.34, and 5.43 to 5.51
7. Ensure organizational effectiveness	7.3	Analysis and consideration of reports on partnership arrangements for, and implementation of, environmental programmes	Annual	TCC	MEPC		Completed	Completed	MEPC 72/17, section 12; MEPC 73/19, section 13; and MEPC 74/18, section 12
7. Ensure organizational effectiveness	7.9	Revised documents on organization and method of work, as appropriate	2019	Council	MSC / FAL / LEG / TCC / MEPC		Completed	Completed	MEPC 72/17, section 14; MEPC 73/19, section 16; and MEPC 74/18, section 15

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
OW. Other work	OW.10	Measures to harmonize port State control (PSC) activities and procedures worldwide	Continuous	MSC / MEPC	HTW / PPR / NCSR	III	Ongoing	Ongoing	MEPC 70/18, paras. 2.2, 5.18 to 5.20 and 15.20; MSC 97/22, para. 19.8; PPR 5/24, paras. 11.5, 13.18, 13.21, 18.15 and 18.16; III 5/15, section 5; MEPC 73/19, paras. 3.8 and 11.30 to 11.33; and MEPC 74/18, paras. 5.15 to 5.24
OW. Other work	OW.13	Endorsed proposals for new outputs for the 2018-2019 biennium as accepted by the Committees	Annual	Council	MSC / MEPC / FAL / LEG / TCC		Completed	Completed	MEPC 72/17, section 15; MEPC 73/19, section 15; and MEPC 74/18, section 14
OW. Other work	OW.16	Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)	Annual	MSC / MEPC	III		Completed	Completed	MEPC 72/17, paras. 7.4 and 4.24 to 4.33; and III 5/15, section 8

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)									
Reference to SD, if applicable	Output number	Description	Target completion year	Parent organ(s)	Associated organ(s)	Coordinating organ	Status of output for Year 1	Status of output for Year 2	References
OW. Other work	OW.19	Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas	Annual	MSC / MEPC	III	CCC	Completed	Completed	CCC 5/13, section 9
OW. Other work	OW.23	Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance	2019	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress	Completed	MEPC 72/17, sections 5 and 7; and MEPC 73/19, section 7
OW. Other work	OW.24	Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance	2019	Assembly	MSC / MEPC / FAL / LEG / TCC	Council	In progress	Completed	MEPC 72/17, sections 5 and 7; MEPC 73/19, section 13; and MEPC 74/18, section 12
OW. Other work	OW.49	Review the Model Agreement for the authorization of recognized organizations acting on behalf of the Administration	2018	MSC / MEPC	III		In progress	Extended	III 5/15, section 11; and MEPC 74/18, para.14.25

ANNEX 25

PROPOSED OUTPUTS OF MEPC FOR THE 2020-2021 BIENNium

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
1. Improve implementation	1.2	Input on identifying emerging needs of developing countries, in particular SIDS and LDCs to be included in the ITCP	Assembly	MSC/MEPC/FAL/LEG		Continuous
1. Improve implementation	1.3	Validated model training courses	MSC/MEPC	III/HTW/PPR/CCC/SDC/SSE/NCSR		Continuous
1. Improve implementation	1.4	Analysis of consolidated audit summary reports	Assembly	MSC/MEPC/LEG/TCC /III	Council	Annual
1. Improve implementation	1.5	Non-exhaustive list of obligations under instruments relevant to the IMO Instruments Implementation Code (III Code)	MSC/MEPC	III		Annual
1. Improve implementation	1.7	Identify thematic priorities within the area of maritime safety and security, marine environmental protection, facilitation of maritime traffic and maritime legislation	TCC	MSC/MEPC/ FAL/LEG		Annual
1. Improve implementation	1.9	Report on activities within the ITCP related to the OPRC Convention and the OPRC-HNS Protocol	MEPC	MEPC		Annual
1. Improve implementation	1.12	Review of the 2015 Guidelines for exhaust gas cleaning systems (resolution MEPC.259(68))	MEPC	PPR		2020
1. Improve implementation	1.14	Revised guidance on ballast water sampling and analysis	MEPC	PPR		2021

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
1. Improve implementation	1.15	Revised guidance on methodologies that may be used for enumerating viable organisms	MEPC	PPR		2021
1. Improve implementation	1.17	Development of guidelines for onboard sampling of fuel oil not in use by the ship	MEPC	PPR		2020
1. Improve implementation	1.18	Measures to ensure quality of fuel oil for use on board ships	MEPC	PPR		2021
1. Improve implementation	1.26	Revision of MARPOL Annex IV and associated guidelines to introduce provisions for record-keeping and measures to confirm the lifetime performance of sewage treatment plants	MEPC	III/HTW	PPR	2021
1. Improve implementation	1.27	Review of the BWM Convention based on data gathered in the experience-building phase	MEPC			2023
1. Improve implementation	1.28	Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention	MEPC			2023

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
1. Improve implementation	1.[...] ¹	Review of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.207(62))	MEPC	PPR		2021
1. Improve implementation	1.[...] ²	Evaluation and harmonization of rules and guidance on the discharge of liquid effluents from EGCS into waters, including conditions and areas	MEPC	PPR		2021
2. Integrate new and advancing technologies in the regulatory framework	2.2	Approved ballast water management systems which make use of Active Substances, taking into account recommendations of the GESAMP-BWWG	MEPC			Annual
2. Integrate new and advancing technologies in the regulatory framework	2.13	Review of the IBTS Guidelines and amendments to the IOPP Certificate and Oil Record Book	MEPC	PPR		2020
2. Integrate new and advancing technologies in the regulatory framework	2.14	Amendments to regulation 14 of MARPOL Annex VI to require a dedicated sampling point for fuel oil	MEPC	SSE	PPR	2020

¹ Included from the post-biennial agenda.

² New output approved by MEPC 74.

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
2. Integrate new and advancing technologies in the regulatory framework	2.17	Consideration of development of goal-based ship construction standards for all ship types	MSC / MEPC			2021
2. Integrate new and advancing technologies in the regulatory framework	2.18	Standards for shipboard gasification of waste systems and associated amendments to regulation 16 of MARPOL Annex VI	MEPC	PPR		2020
2. Integrate new and advancing technologies in the regulatory framework	2.19	Amendment of annex 1 to the AFS Convention to include controls on cybutryne, and consequential revision of relevant guidelines	MEPC	PPR		2020
2. Integrate new and advancing technologies in the regulatory framework	2.[...] ³	Development of amendments to MARPOL Annex VI and the NO _x Technical Code on the use of multiple engine operational profiles for a marine diesel engine	MEPC	PPR		2021
3. Respond to climate change	3.1	Treatment of ozone-depleting substances used by ships	MEPC			Annual
3. Respond to climate change	3.2	Further development of mechanisms needed to achieve the limitation or reduction of CO ₂ emissions from international shipping	MEPC			Annual

³ Included from the post-biennial agenda.

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
3. Respond to climate change	3.3	Reduction of the Impact on the Arctic of Black Carbon emissions from international shipping	MEPC	PPR		2021
3. Respond to climate change	3.4	Promotion of technical cooperation and transfer of technology relating to the improvement of energy efficiency of ships	MEPC			2021
3. Respond to climate change	3.5	Revision of guidelines concerning EEDI and SEEMP	MEPC			2021
3. Respond to climate change	3.6	EEDI reviews required under regulation 21.6 of MARPOL Annex VI	MEPC			2021
3. Respond to climate change	3.7	Further technical and operational measures for enhancing the energy efficiency of international shipping	MEPC			2021
4. Engage in ocean governance	4.1	Identification and protection of Special Areas, ECAs and PSSAs	MEPC	NCSR		Continuous
4. Engage in ocean governance	4.2	Input to the ITCP on emerging issues relating to sustainable development and achievement of the SDGs	TCC	MSC/FAL/LEG/MEPC		2021
4. Engage in ocean governance	4.3	Follow-up work emanating from the Action Plan to address marine plastic litter from ships	MEPC	PPR/III/HTW		2021
6. Ensure regulatory effectiveness	6.1	Unified interpretation of provisions of IMO safety, security and environment-related conventions	MSC/MEPC	III/PPR/CCC/SDC/SSE/NCSR		Continuous

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
6. Ensure regulatory effectiveness	6.3	Safety and pollution hazards of chemicals and preparation of consequential amendments to the IBC Code	MEPC	PPR		Continuous
6. Ensure regulatory effectiveness	6.4	Lessons learned and safety issues identified from the analysis of marine safety investigation reports	MSC / MEPC	III		Annual
6. Ensure regulatory effectiveness	6.5	Identified issues relating to the implementation of IMO instruments from the analysis of PSC data	MSC / MEPC	III		Annual
6. Ensure regulatory effectiveness	6.7	Consideration and analysis of reports on the alleged inadequacy of port reception facilities	MEPC	III		Annual
6. Ensure regulatory effectiveness	6.8	Monitoring the worldwide average sulphur content of fuel oils supplied for use on board ships	MEPC			Annual
6. Ensure regulatory effectiveness	6.11	Development of measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters	MEPC	PPR		2020
6. Ensure regulatory effectiveness	6.15	Role of the human element	MSC/MEPC	III/PPR/CCC/SDC/SSE/NCSR	HTW	Continuous
7. Ensure organizational effectiveness	7.1	Endorsed proposals for the development, maintenance and enhancement of information systems and related guidance (GISIS, websites, etc.)	Council	MSC/MEPC/FAL/LEG/TCC		Continuous

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
7. Ensure organizational effectiveness	7.3	Analysis and consideration of reports on partnership arrangements for, and implementation of, environmental programmes	TCC	MEPC		Annual
7. Ensure organizational effectiveness	7.9	Revised documents on organization and method of work, as appropriate	Council	MSC/FAL/LEG/TCC/MEPC		2021
OW. Other work	OW.10	Measures to harmonize port State control (PSC) activities and procedures worldwide	MSC/MEPC	HTW/PPR/NCSR		Continuous
OW. Other work	OW.13	Endorsed proposals for new outputs for the 2022-2023 biennium as accepted by the Committees	Council	MSC/MEPC/FAL/LEG/TCC		Annual
OW. Other work	OW.16	Updated Survey Guidelines under the Harmonized System of Survey and Certification (HSSC)	MSC / MEPC	III		Annual
OW. Other work	OW.19	Consideration of reports of incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas	MSC / MEPC	III		Annual
OW. Other work	OW.23	Cooperate with the United Nations on matters of mutual interest, as well as provide relevant input/guidance	Assembly	MSC/MEPC/FAL/LEG/TCC		2021

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)						
PLANNED OUTPUTS 2020-2021						
Reference to SD, if applicable	Output number	Description	Parent organ(s)	Associated organ(s)	Coordinating organ(s)	Target completion year
OW. Other work	OW.24	Cooperate with other international bodies on matters of mutual interest, as well as provide relevant input/guidance	Assembly	MSC/MEPC/FAL/LEG/TCC		2021
OW. Other work	OW.49	Review the Model Agreement for the authorization of recognized organizations acting on behalf of the Administration	MSC / MEPC	III		2020

ACCEPTED OUTPUTS ON THE POST-BIENNIAL AGENDA OF MEPC

MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC)							
ACCEPTED POST-BIENNIAL OUTPUTS			Parent organ(s)	Associated organ(s)	Coordinating organ	Timescale	Reference
No.	Reference to strategic direction, if applicable	Description					
1	1. Improve implementation	Development of training provisions for seafarers related to the BWM Convention	MEPC	HTW		2 sessions	MEPC 73/19, para.15.10.1
2	1. Improve implementation	Development of an operational guide on the response to spills of Hazardous and Noxious Substances (HNS)	MEPC	PPR		2 sessions	MEPC 74/18, para. 14.20
3	6. Ensure regulatory effectiveness	Development of amendments to regulation 19 of MARPOL Annex VI and development of an associated Exemption Certificate for the exemption of ships not normally engaged on international voyages	MEPC	III		2 sessions	MEPC 71/17, para.14.15
4	6. Ensure regulatory effectiveness	Development of necessary amendments to MARPOL Annexes I, II, IV, V and VI to allow States with ports in the Arctic region to enter into regional arrangements for port reception facilities (PRFs)	MEPC	PPR		2 sessions	MEPC 74/18, para. 14.18
5	Other work	Recommendations related to navigational sonar on crude oil tankers	MSC/MEPC	SDC		1 session	MSC 91/22, para. 19.23

ANNEX 26

ITEMS TO BE INCLUDED IN THE AGENDAS OF MEPC 75 AND MEPC 76

No. ¹	Item	MEPC 75 April 2020	MEPC 76 October 2020
1	Adoption of the agenda	X	X
2	Decisions of other bodies	X	X
3	Consideration and adoption of amendments to mandatory instruments	X [DG]	X [DG]
4	Harmful aquatic organisms in ballast water	X [RG]	X [RG]
5	Air pollution prevention	X [WG] ²	X [WG] ²
6	Energy efficiency of ships	X [WG] ²	X [WG] ²
7	Reduction of GHG emissions from ships	X [WG]	X [WG]
8	Follow-up work emanating from the Action Plan to address marine plastic litter from ships	X [WG]	X
9	Identification and protection of Special Areas, ECAs and PSSAs	X	X
10	Pollution prevention and response	X	X
11	Reports of other sub-committees	X	X
12	Technical cooperation activities for the protection of the marine environment	X	X
13	Capacity-building for the implementation of new measures	X	X
14	Work programme of the Committee and subsidiary bodies	X	X
15	Application of the Committees' method of work	X	X
16	Election of the Chair and Vice-Chair	-	X
17	Any other business	X	X
18	Consideration of the report of the Committee	X	X

¹ The numbering may not correspond to the number of the agenda item in the forthcoming sessions.

² The working group, if established under agenda item 5, may also cover agenda item 6.

ANNEX 27

STATEMENTS BY DELEGATIONS AND OBSERVERS*

ITEM 1

Statement by the delegation of Brazil

"Thank you, Mr. Chair. Good morning to all.

Firstly, greetings to all Member States, Intergovernmental Organization and Non-Governmental Organization delegates attending this Marine Environment Protection Committee Session.

As a developing country and with about 95% of all trade carried out by sea, Brazil has been active in this Organization since 1963 and considers safe and environmentally sustainable shipping as fundamental to its prosperity.

We have been an active voice in the discussions on reducing GHG emissions in the IMO. The Initial Strategy that we adopted just a year ago represents an important step in the continued engagement of the shipping sector in contributing to the fight against climate change, in line with the Roadmap established in 2016.

The Initial Strategy is an important milestone for further developing policies and measures by this Organization in order to deal with this complex issue that affects us all, in particular developing countries.

In this context, Brazil is committed to the implementation of the 2016 Roadmap and the Initial Strategy adopted thereunder. Our positions in these relevant discussions will always be in line with the objectives set out in the Initial Strategy, with the reality of international shipping and evidence-based technical studies conducted by independent academic research institutions of recognized capacity. Therefore, as we further progress, as an Organization, in the reduction of GHG gases in the maritime sector, we must ensure that measures can be fully complied with by all Member States, both developed and developing, leaving no country behind. We must work together to prevent that any new measures by the IMO to reduce GHG emissions create, as an undesired effect, trade distortions.

Mr Chair.

Brazil will thus continue to working incessantly and with the utmost willingness to find the best solutions to the issues under our responsibility at the IMO, in a manner that is consistent with the Roadmap and the Initial Strategy, based strictly on sound evidence and mindful of its principles, including the principle of common but differentiated responsibilities and respective capabilities.

This way, Brazil looks forward working together with Member States and Observers to provide concrete answers to global issues of high relevance, showing that this Organization has the capacity to seek and find the best solutions via consensus.

Thank you."

* Statements have been included in this annex as provided by delegations/observers, in the order in which they were given, sorted by agenda item, and in the language of submission (including translation into any other language if such translation was provided). Statements are accessible in all official languages on audio file at: <http://docs.imo.org/Meetings/Media.aspx>

Statement by the delegation of United Arab Emirates

"يسر وفد دولة الإمارات العربية المتحدة بأن يبلغ المنظمة البحرية الدولية ولجنة حماية البيئة البحرية بأن حكومة الإمارات قررت المساهمة بمبلغ عشرة آلاف دولار كمنحة بشأن الدراسة الرابعة بشأن الغازات الدفينة من السفن.

The United Arab Emirates is pleased to inform IMO and MEPC that UAE decided to contribute with an amount of USD (10,000) ten thousand dollars to the Fourth IMO Greenhouse Gas (GHG) study."

"لقد تعرضت أربع سفن تجارية (واحدة تحمل علم الإمارات العربية المتحدة واثنتان تحملان علم المملكة العربية السعودية وواحدة تحمل علم النرويج) وذلك صباح يوم الأحد 12 مايو لعمليات تخريبية باتجاه الساحل الشرقي من إمارة الفجيرة وبالقرب من المياه الإقليمية وفي المنطقة الاقتصادية الخالصة لدولة الإمارات.

كما أن الجهات المعنية بالدولة قامت باتخاذ كافة الإجراءات اللازمة، وجاري التحقيق حول ظروف الحادث وبالتعاون مع الجهات الوطنية والدولية، وستقوم الجهات المعنية بالتحقيق ورفع النتائج حين الانتهاء من إجراءاتها.

إن العمليات التخريبية لم تنتج عنها أي أضرار أو إصابات بشرية، كما لا يوجد أي تسرب لأي مواد ضارة أو وقود من هذه السفن.

كما نؤكد بأن العمل يسير في ميناء الفجيرة بشكل طبيعي وبدون أي توقف، وأن الشائعات التي تحدثت عن وقوع الحادث داخل الميناء، عارية عن الصحة ولا أساس لها، وأن الميناء مستمر في عملياته الكاملة وبشكل روتيني.

كما تشدد حكومة الإمارات بأن تعريض السفن التجارية لأعمال تخريبية وتهديد حياة أطقمها يعتبر تطوراً خطيراً، ونؤكد على ضرورة قيام المجتمع الدولي بمسؤولياته لمنع أي أطراف تحاول المساس بأمن وسلامة حركة الملاحة البحرية وهذا يعتبر تهديداً للأمن والسلامة الدولية.

وسيتم لاحقاً إخطار المنظمة البحرية الدولية بالمستجدات بعد الانتهاء من التحقيقات، كما يرجى تضمين هذا البيان في التقرير النهائي للجنة."

Statement by the delegation of Saudi Arabia

"السيدات والسادة ممثلي الوفود المحترمة

السلام عليكم ورحمة الله وبركاته

إن وفد بلادي يؤيد البيان الذي أدلى به وفد دولة الإمارات العربية المتحدة الشقيقة كما نود أن نعبر عن استنكارنا الشديد لما تعرضت له أربع سفن تجارية منها سفينتين تحمل العلم السعودي من هجوم تخريبي في المياه الاقتصادية لدولة الإمارات لعربية المتحدة، وأود بأن أؤكد على أن هذا العمل الإجرامي يشكل تهديداً خطيراً لأمن وسلامة حركة الملاحة البحرية، وحماية البيئة البحرية والذي ينعكس سلباً على السلم والأمن الإقليمي والدولي، وختاماً أود أن نؤكد عن تضامننا ووقوفنا إلى جانب دولة الإمارات العربية المتحدة الشقيقة في جميع ما تتخذ من إجراءات لحفظ أمنها وسلامة السفن والحفاظ على البيئة البحرية.

وارجو منكم سيدي الرئيس تضمين هذه الكلمة في التقرير النهائي لهذه اللجنة

وشكراً"

"ITEM 3

Statement by the delegation of United States

"Thank you Mr. Chair.

At the seventy-third session of this Committee, the United States opposed the Committee's approval in principle of the *Guidelines for the use of electronic record books under MARPOL*. The United States similarly opposed this Committee's decision to approve amendments to MARPOL Annexes I, II, V, VI, and the NOx Technical Code to allow for the use of electronic record books. Accordingly, the United States reserved its position at MEPC 73 on these issues.

Here, we recall our position from MEPC 73, and again express that we do not support the adoption of the draft MEPC resolution on *Guidelines for the use of electronic record books under MARPOL* contained in MEPC 74/3/6, and the proposed amendments pertaining to electronic record books in MARPOL Annexes I, II, and V in MEPC 74/3; Annex VI in MEPC 74/3/2, and the NOx Technical Code in MEPC 73/3/3. The United States reiterates its long-held view that the use of electronic record books should only be permitted after mandatory requirements for electronic record books are adopted and incorporated into the text of MARPOL. Without doing so, we would be reducing the level of care and environmental protection currently provided in MARPOL.

Thank you Mr. Chair."

"Thank you Chair.

With regard to the decisions by this Committee to adopt amendments to MARPOL Annexes I, II, V and VI, and the NOx Technical Code to allow for the use of electronic record books along with adoption of MEPC resolution on *Guidelines for the use of electronic record books under MARPOL*, and in keeping with our previous statement, the United States reserves its position and requests this be recorded in the final report of the Committee.

Thank you Chair."

ITEM 4

Statement by the delegation of Canada

"The BWM Convention states that unmanaged ballast water discharges have harmed the environment, and that globally applicable rules are needed to prevent, minimize and ultimately eliminate the risks arising from the transfer of organisms in ballast water.

The Convention currently reflects the fact that these risks are independent of the type of ship involved in transporting ballast water. Exempting or relaxing requirements for certain ship types would run counter to the Convention's goals of preventing, minimizing and ultimately eliminating these risks.

The Convention includes a rich array of options for ballast water management that are suitable for the wide variety of ships that are subject to its requirements. The Convention also includes a flexible provision (Regulation B-3.7) that allows for the approval of new methods that provide the same level of protection.

Instead of developing new exemption provisions at this time, the Committee should therefore take appropriate steps to encourage the use of the full range of available ballast water management options in the Convention. If such options are found to be insufficient, the Committee should encourage and support the development of new solutions in accordance with Regulation B-3.7."

ITEM 5

Statement by the observer of ISO

"Mr. Chairman, distinguished delegates

In July 2017, MEPC 71 requested ISO to consider the framework of ISO 8217 with a view to ensuring consistency between the relevant ISO standards on marine fuel oils and the implementation of regulation 14.1.3 of MARPOL Annex VI (MEPC 71/17, paragraph 14.27.5) and therefore ISO would like to report today on the work undertaken to respond to this request.

ISO 8217:2017 was published in March 2017 and the ISO Working Group continued its activities in order to respond to the IMO query by MEPC74 latest.

In view of the 0.50 % sulphur implementation date and also because 0.50% fuels were not widely available on the market at the time to obtain a full scope of the fuels that would be offered, it was considered that a revision of ISO 8217:2017 was not possible in the given timeframe and therefore ISO initiated the process to develop an ISO Publicly Available Specification (ISO PAS 23263).

ISO PAS 23263 shall be used in conjunction with ISO 8217:2017 which covers marine fuel oils delivered to the market today including 0.10 % sulphur fuel oils, higher sulphur fuel oils, as well as 0.50 % sulphur fuel oils but can also be used in conjunction with earlier editions of ISO 8217 in the event an earlier edition is referenced in the commercial agreement between parties. The PAS will not introduce new specifications nor an additional table for 0.50 % sulphur fuels.

The PAS will provide general considerations that apply to all 0.50 % sulphur fuels, including sulphur content and flash point, and technical aspects on kinematic viscosity, cold flow properties, ignition characteristics, catalyst fines, and stability that might apply to specific fuels.

In addition, it will provide, through informative Annexes, considerations on stability as well as the composition of fuels, and additional information on Annex B of ISO 8217:2017 which is related to deleterious materials.

ISO PAS 23263 will also provide considerations on commingling of fuels including information on pre-delivery compatibility testing and information on other test methods which can be used to evaluate stability and compatibility of fuels.

To address the potential risk of incompatibility when commingling fuels having varying blend formulation, the ISO working group conducted a test program to investigate whether test methods currently not yet widely used for marine fuel stability testing, can provide further and consistent information on the stability and potential instability of fuels or mixtures of fuels. These test methods, which are standardized methods, allow the determination of parameters that relate to the stability of the asphaltenes in the fuels and the ability of the fuel oil matrix to keep the asphaltenes in solution. Although the test program was conducted on a limited set of fuel oil samples that are anticipated to likely represent what will be available in the market from late 2019, including ULSFO, VLSFO, HSFO, these test methods predicted that approximately 50% of the evaluated mixtures shows the fuels, despite their diverse formulations,

to be compatible whatever the mixing ratio is, with TSP below 0.10%. For the remaining 50%, the prediction was indicating a risk for incompatibility at specific mixing ratio, but often not confirmed by elevated TSP test results. More detail will be given in the study's final report.

The existing spot test and total sediment tests remain the first tests to do to obtain information on the stability and compatibility of fuels. More detailed information on the use of test methods related to stability and compatibility will be included in a CIMAC guideline document entitled "General guidance in marine fuel handling in connection to stability and compatibility".

The balloting of ISO PAS 23263 was initiated on April 18th 2019 for a period of 2 months after which received comments shall be reviewed prior publication. Estimated timeframe for publication is August-September 2019.

The revision of ISO 8217:2017 will be initiated after publication of the PAS and will consider the information included in the PAS and feedback from the industry on the use of 0.50 % S fuels."

Statement by the observer of IACS

"IACS would like to advise the Committee that IACS Members will not be replacing the existing supplement to the IAPP certificate with the revised version in line with resolution MEPC.305(73) before the entry into force (EIF) of the Resolution (i.e. 1 March 2020). IACS will re-issue the supplement at the opportunity of the IAPP survey occurring after the date of EIF of the amendments, as per paragraph 3.2 of MSC/MEPC.5-Circ.6, unless provided with written instruction by the Administration to apply a different application criterion. This principle applies regardless whether a ship has been already fitted with an equivalent arrangement (e.g. EGCS) before the EIF of resolution MEPC.305(73)."

Statement by the observer of IFSMA

"IFSMA would like to thank IACS for this very well written and balanced paper and in particular highlighting Paragraphs 9 and 10. In trying to attain EEDI the dangers of ships not having sufficient power to operate safely in adverse weather conditions and heavy seas, or manoeuvre and stop safely, is of considerable concern. In view of these significant safety concerns the issue of Minimum Power provisions for ships must be properly addressed by the Organization without further delay, taking into account the practical advice of the shipping community and, in particular, experienced Shipmasters and not just theoretical technical data."

ITEM 7

Statement by the observer of UNFCCC

"Opening

Thank you, Mr. Chairman.

I would like to take this opportunity, on behalf of the UNFCCC secretariat, to inform the Committee of (i) the key outcomes of COP 24 and SBSTA 49, which took place in Katowice in December 2018, and their relevance to IMO's work in addressing greenhouse gas (GHG) emissions from international maritime transport; (ii) the outlook for COP 25, to be held in Santiago, Chile; and (iii) our expectations for this MEPC session.

Key outcomes of COP 24 and SBSTA 49

COP 24

I wish to start by emphasizing the significance of the adoption of the Katowice climate package, which operationalizes the climate change regime under the Paris Agreement through relevant guidelines.

The delivery of this package was the culmination of an incredible amount of work at both the State and non-State level. It was a triumph of multilateralism and signalled the start of a new era in our collective efforts to address climate change and transition to full implementation of the Paris Agreement.

As a result, countries can now establish the national systems they need to implement the Paris Agreement. The guidelines will promote trust among nations that each is doing its part. Importantly, the guidelines outline how countries will provide information on their nationally determined contributions, or NDCs, the specific climate actions they will take and how they will account for them. With particular regard to emissions from international transport, the guidelines stipulate that each Party should identify mitigation policies and measures, as well as actions and plans.

The Katowice climate package includes details on not only mitigation and adaptation measures, but also financial, technology and capacity building support for climate actions in developing countries. In addition, it provides flexibility for developing countries in view of their capabilities and different economic and social realities.

This is crucial, because current pledges under the NDCs bring global GHG emissions nowhere near where they need to be to achieve the Paris Agreement goals. The Paris Agreement is clear: we must limit the global temperature rise to well below 2 °C above pre-industrial levels and pursue efforts to limit the rise to 1.5 °C.

The Special Report on Global Warming of 1.5 °C, recently published by the IPCC, reinforces this objective by stressing that the world must prevent the average global temperature from rising by more than 1.5 °C above pre-industrial levels if it is to avoid irreversible climate change. To achieve this, according to the report, we need to lower global CO₂ emissions by about 45% below the 2010 baseline by 2030. In other words, we have 12 years left to do this.

Increasing overall climate ambition is thus a matter of urgency. However, on one area of particular importance in this regard – namely the rules on voluntary international cooperation, including market-based approaches – the Parties could not reach agreement in Katowice.

SBSTA 49

IMO provided SBSTA 49 with an update on its recent progress and results in addressing GHG emissions from international maritime transport, with a particular focus on its GHG reduction strategy and its capacity-building and assistance activities.

In response to the interest expressed by many Parties, SBSTA had initiated a discussion on both the procedural and the substantive aspects of reporting by ICAO and IMO. For the first time, this discussion was guided by two facilitators and attended by representatives of IMO. However, since there was not enough time for the Parties to find common ground, consideration of the matter will continue at the next SBSTA session, in accordance with UNFCCC rules.

Nonetheless, a general consensus exists among Parties on the need to further showcase progress in this area in the ICAO and IMO submissions to the SBSTA. Therefore, at SBSTA 50 in Bonn, particular importance will be attached to highlighting the results achieved by IMO and the support provided to the Member States in building their capacities to implement relevant measures. It is expected that more time will be dedicated to this important item at the next SBSTA session.

Outlook for COP 25

The adoption of the Katowice climate package has resulted in clear expectations, firstly that the emphasis in the UNFCCC process will shift from negotiations to the full implementation of the Paris Agreement and the enhanced implementation of the Convention and the Kyoto Protocol, and secondly that the updated or new NDCs, to be submitted by 2020, will be in line with the findings set out in the recent IPCC special report.

Therefore, COP 25 is expected to focus on the Parties' ambitions in addressing climate change, the submission of the updated or new NDCs and the transition to the full implementation of the Paris Agreement. The COP is also expected to refine the guidelines for the Paris Agreement by following up on the work done in Katowice and, importantly, agreeing on guidance for the implementation of international voluntary cooperation under Article 6 of the Paris Agreement.

With specific regard to Article 6, Parties must reconcile their differences of opinion including on: (i) whether to apply corresponding adjustment to the mechanism under Article 6, paragraph 4, to avoid double counting; (ii) transition of activities and units of mechanisms under the Kyoto Protocol to Article 6, paragraph 4, mechanism and; (iii) whether to apply share of proceeds for adaptation to cooperative approaches.

Expectations from this MEPC session

Building on the momentum created by the historical adoption of the IMO initial strategy at MEPC 72 and the subsequent adoption of the programme of follow-up actions at MEPC 73, it is without any doubt that MEPC 74 will strengthen the response of the international maritime transport sector to the serious threat of climate change.

On behalf of the UNFCCC secretariat, I would like to encourage the MEPC to aim to achieve further tangible progress at this session, in particular by adopting the procedure for the assessment of impacts on States, the terms of reference for the fourth IMO GHGs Study and the resolution to encourage voluntary cooperation between ports and shipping sectors.

Taking into account the urgent need for further emission reductions identified in the vision of the initial strategy and recent IPCC special report, the following could be considered in discussions at MEPC 74:

- .1 the short-term measures envisaged in the programme of follow-up actions not subject to data analysis should be adopted and implemented as early as possible after MEPC 75 in 2020;
- .2 the timeline for developing candidate mid-term measures are encouraged to be agreed as early as possible after MEPC 76 in 2020 with a view to the adoption and implementation of such measures as soon as possible after MEPC 80 in 2023; and
- .3 establishing institutional arrangements to enable such early actions should be encouraged;

I look forward to working with you this week and in the future to jointly accelerate climate actions and increase climate ambition in line with the goals of the Paris Agreement.

As always, I hope to further strengthen the excellent cooperation between our secretariats on climate-related matters.

Thank you for your attention."

Statement by the delegation of Cook Islands

"We should reflect on the fact that it is only a few years since the World Maritime Day theme was "Shipping - Indispensable to the World". The importance of shipping to society, not least the SIDS and LDCs, gives the IMO's work a significance that reaches far beyond the industry itself.

We should take into account some of the work done by UNCTAD highlighting the role of freight transport, including maritime transport, which is 90% of global transport, in addressing global sustainability and the resilience agenda. It also noted that the developing countries in particular face higher transport costs with limited transport connectivity and access to our markets, which impacts on many other people. So it is right and proper that we thank all those who have submitted measures and recognize the importance of assessing all these measures and identifying any linkage between them to try to get the best from them all.

We would like to offer our thanks to Mr Oftedal and his team for finalising on the impact on states because as these measures are further developed it is imperative that we take into account the subsequent impacts, not the least disproportionate impacts on states.

I note that we are going back 9 years to a reincarnation of the MBM ideas. Let us Be clear, taking into account what UNCTAD was saying about our high transport costs, lack of connectivity to markets, any notion of imposing a tax, levy or tariff on shipping thus increasing our transport costs and reducing the availability of freight even further would be extremely detrimental to SIDS and LDCS, and severely impact our social fabric and inhibit our growth and development potential.

I would also make reference to UNESCAP and the recognition of the need for sustainable sea transport in the Pacific and the vital need for regional cooperation and integration. It went on to say that the future of the Pacific economies and the potential for trade will therefore depend on effective sea transport for the foreseeable future.

The impact of a number of these measures could be disproportionate, which concerns us greatly. That being case, out of all the measures there, it would appear to us that the only one that could satisfy and link in with what UNCTAD and UNESCAP have said would have to be an optimum speed measure, if indeed speed measures are to be imposed by the Organization. But those measures could only be on global shipping on international routes.

In our case the goods come from far afield to get to the main regional distribution ports, which in our case would be Auckland and goods then have to get out to us at the end of the supply chain, deep into the Pacific, with irregular sailings by a limited number of ships of the size that can serve our region. Therefore it may be that once reaching those major distribution ports we will have to consider exemptions for that tonnage in then serving outlying islands."

Statement by the delegation of Marshall Islands

"Thank you Chair, Excellencies and Distinguished delegates.

Yesterday, the Climate Action Pacific Partnership meeting closed in Fiji, at that meeting, Pacific heads of state agreed to work together to reduce fossil fuel use in our marine transportation by up to 40% by 2030 and 100% by 2050.

Today our Pacific leaders are meeting in Fiji, with the Secretary General of the UN, on stepping up climate action. As you can see, our region is critically engaged in driving the global agenda forward, as well as delivering at home.

As LDCs and SIDS we are heavily engaged, and are the first affected by the failure to address climate change. We do all this with extremely limited resources, both financial and in capacity.

We must ensure that the future working arrangements of the IMO are not discriminative, favouring developed countries or those close to London. We would support the stand alone working group.

We would like to thank the co-sponsors for their helpful suggestions in MEPC 74/7/12 and lend our support to the establishment of a fund to support the participation of LDCs and SIDS to ensure the process is kept equitable and fair.

Finally Chair, Marshall Islands supports the establishment of a dedicated standing technical group.

Komol tata/ Thank you chair."

Statement by the delegation of Spain

"We thank the Chair, the Secretariat and all the delegates for their work during these past two weeks, progress was made on this important and pressing issue.

On the issue of future work arrangements, this delegation completely understands and fully supports the importance to make progress on this issue. Bearing that in mind, we appreciate and recognize that you Mr Chair, take actions and make decisions to move things along.

However, Mr Chair, bearing in mind the significance and sensitivity of the issue, we also feel that, even under great time pressure, no hasty decision should be taken and the IMO procedures should be duly applied.

Under severe time constraint, a provisional conclusion can be made on the basis of the majority of statements, allowing those not in support to express their view to the contrary.

If the provisional conclusion do not rally the room, allowing all delegations asking for the floor to express their opinion before making the final decision becomes vital. Only then can we be sure the decisions made reflect the will of the Committee and is based on a sound foundation.

On the issue of future work arrangements, all delegations asking for the floor were not allowed to speak, due to time constraints – which we regret. We are concerned, the lack of a full discussion in plenary creates concern for achieving the level of ambition as set out in the initial strategy.

We are pleased with the achievements made earlier this week with the agreement on an impact assessment procedure, however we now need to move forward with the next steps, and need clear working arrangements to progress our work.

We would like to encourage Member States to keep working together as we have been doing, to establish a robust structure that can allow the organization to move forward and achieve its goals."

Statement by the delegation of Solomon Islands

"Mr Chairman, Excellencies, fellow IMO members, ladies and gentlemen, good morning/afternoon to you all.

It is my pleasure to introduce two papers, MEPC 74/7/12 and 74/7/13, on behalf of the co-sponsors.

These papers comment on and respond to the paper prepared by the Secretariat on possible future working arrangements for GHG emissions reduction. I am sure we are all fully aware of the immense workload before us, and I thank the Secretariat for preparing their paper to allow us to consider how we best move forward as it is a very important matter.

As a Small Island Developing State and a Least Developed Country from the Pacific, Solomon Islands is acutely aware of the challenges developing countries, SIDS and LDCs face in participating in IMO meetings.

These challenges reflect the great distances that we have to travel to get to London and the associated financial costs. Given our very limited government budgets, the small human resource available to us in our government ministries, and the length of time that our delegates are away from home. For us to attend one IMO meeting can often mean that our staff are away from home for almost one month because of the limited flight schedules and options available to us. This is a very real challenge.

Yet as some of the most Climate Vulnerable already suffering from the impacts of climate change, the work being done to reduce GHG emissions from international shipping is of critical importance to us. We must participate in the discussions and decision-making, as these are matters that profoundly impact us.

The Secretariat has outlined several options for how the workload on GHG emissions reduction could be managed, and we are most grateful to the Secretariat for their paper.

However we wish to note that whichever option is agreed upon, how developing countries, and especially SIDS and LDCs, can be supported to participate is of great concern to us.

We have been participating in the IMO intersessional and MEPC meetings in regards GHG emissions reduction for the past few years, and each time we spend significant time and effort in identifying and securing funding to enable our participation.

In that regard we are extremely grateful for the support that other IMO members including New Zealand, the United Kingdom, the European Commission and others have provided to the Solomon Islands and our Pacific neighbours to ensure that we are able to actively participate in the IMO meetings where GHG emissions reduction has been discussed. Yet each time it is a challenge.

We are also aware that because of this financial support, the Pacific is fortunate to be relatively well represented when compared to SIDS and LDCs from other parts of the world.

Whilst some SIDS and LDCs have permanent representatives or embassies based in London who are able to represent their respective States in the IMO, there are others of us who are not in that fortunate position.

I note that of the 67 SIDS and LDCs who are members of IMO, from MEPC 70 to date, on average only 13 have participated in the Intersessional Working Group on GHG meetings, 24 in the MEPC meetings, and only 9 in the MEPC Working Groups on GHG.

And the Pacific IMO Member States make up the bulk of those participating in the Intersessional and Working Group meetings. I am sure this is because of the funding that we have been fortunate to secure. But there are many from other parts of the world who have not participated.

We are therefore seeking consideration as to how those developing countries, SIDS and LDCs who require financial assistance can be supported to participate in the GHG emissions reduction work into the future.

It is of course an issue that applies not just to GHG emissions reduction, and ideally one that should be addressed more widely within IMO. However, recognising the costs associated with such support, we are seeking consideration specifically in relation to GHG emissions reduction in these two papers, as climate change is the only issue that threatens our very existence.

In other UN international forums there are mechanisms to support the participation of developing countries, SIDS and LDCs that recognize the specific challenges we face. Some examples of these include travel-related financial support available to official representatives to UN General Assembly meetings, the UN Convention against Corruption, the World Trade Organization, the Montreal Protocol, UN Secretariat Consultative Process on Oceans and the Law of the Sea, and the UNFCCC to name just a few.

We recognize that the IMO Convention article addressing the funding of delegations' participation may require amendment in order for such financial support to be provided to developing countries, especially SIDS and LDCs, and our second paper (MEPC 74/7/13) outlines a proposal for how the Convention could be amended to this effect.

We also recognize that this is a difficult issue to address, and that it has financial implications and will take time, however we believe that without serious consideration as to how the particular challenges faced by developing countries, SIDS and LDCs can be addressed, whatever working arrangements are agreed to will potentially discriminate against those States most vulnerable to climate change. We have put forward two options but welcome other suggestions and are open to exploring these.

We therefore request this Committee to agree to further consideration of this matter

Thank you. His Excellency Mr Eliam Tangirongo, High Commissioner to the UK, Solomon Islands"

Statement by the delegation of Tonga

"Mr Chairman, Excellencies, fellow IMO members, ladies and gentlemen, good morning/afternoon to you all.

Firstly my thanks to the co-sponsors of papers MEPC 74/7/12 and 74/7/13. Whilst Tonga is not listed as a co-sponsor, these papers were considered and approved for support by our Cabinet, but unfortunately not in time to meet the deadline for submission of commenting papers.

His Excellency from the Solomon Islands in his introduction eloquently outlined the challenges faced by SIDS and LDCs in participating in the work of the IMO on GHG emissions reduction but also how critically important this work is to our States which are amongst the most Climate Vulnerable.

Our government's capacity to participate is essential, but also limited. We have only small numbers of staff, and indeed the very reason for my being here today is because our technical staff with expertise in this area are required back home to prepare for an IMO audit.

Our lack of human and financial resources places us at a distinct disadvantage, and yet Pacific leaders have committed us to do all we can in all forums to press for urgent action to tackle the existential threat of climate change.

We understand that financing to support the participation of SIDS and LDCs in the future meetings of IMO on GHG emissions reduction from international shipping is fraught. However the IMO needs to consider HOW the words in so many resolutions and policies that recognize the special needs of SIDS and LDCs are to be given effect to.

Of course, there are other issues of importance to us such as the impacts of underwater noise from shipping on marine mammals, of safety and bio-security, of plastics pollution of our oceans. However, climate change threatens our very survival and we have to ensure our voices are heard in these important IMO meetings and decision-making processes. If we don't we will simply have to live what you all decide in our absence.

I therefore urge you to carefully consider our papers and to start to look into how we can be supported to participate in the future meetings on GHG emissions reduction.

As His Excellency from the Solomon Islands has already said, we are fortunate to have had the support of other IMO Member States, and Tonga would like to thank the Netherlands in particular for their cooperation which has emanated from the bilateral agreement we signed here at the IMO last year.

Not only has the Netherlands offered their support for our attendance at the meetings but also provided technical support by sending port and maritime economics experts from the Erasmus University of Rotterdam to our Government last year to assist us in assessing and identifying how we can decarbonise our domestic shipping and ports. This type of technical cooperation is to be supported and encouraged to my mind.

The reality is, however, that if the future working arrangements moving forward are to be equitable, some form of financial assistance is needed.

As His Excellency from the Solomon's has noted, there are already existing mechanisms such as trust funds in other UN bodies for exactly this purpose, with criteria as to how such funds are allocated and rules to ensure that the funding is not abused. These could be used as the basis for development of criteria for funding for SIDS and LDCs' participation in IMO GHG emissions meetings.

Knowing what a challenge it can be for counties such as ours, we are making this call on behalf of all SIDS and LDCs, as we see from previous IMO meetings that African LDCs in particular and SIDS from other parts of the world have not been well represented.

Malo 'aupito. Her Excellency Titilupe Fanetupouvava'u Tu'ivakano. High Commissioner to the UK, Government of Tonga"

ITEM 14

Statement by the delegation of Panama

"La República de Panamá respeta la decisión de la OMI en relación a la medida para el cumplimiento con el bajo porcentaje de azufre en los combustibles, y continúa trabajando arduamente para garantizar la implantación apropiada de la norma, que entrará en vigencia a partir del 1ero de enero de 2020. Sin embargo, consideramos que existe la necesidad de continuar analizando detalladamente y deliberando sobre las mejoras a las directrices actuales que rigen las principales opciones de cumplimiento actualmente permitidas, que contribuyen a la reducción de la contaminación y las emisiones, con los valiosos aportes de los Estados miembros, los expertos, como también las partes interesadas de la industria marítima; sin menoscabar los esfuerzos realizados en buena fe.

Es de suma importancia que no olvidemos la realidad, siendo que actualmente los lavadores o depuradores son opciones permitidas por los Estados de abanderamiento bajo normativa OMI, los cuales son considerados como parte de las medidas dirigidas a mejorar la calidad del medioambiente marino. Es por esto que, todos los estudios científicos disponibles y la experiencia adquirida en la utilización actual y real de los depuradores, deberían ser integrados y examinados como parte de nuestros esfuerzos y labor constante.

El Registro Marítimo panameño, ha aprobado y reportado debidamente ante la OMI, Sistemas de Limpieza de los gases de escape instalados a los buques de su flota. Sistemas que se han aprobado en conformidad con las Directrices OMI vigentes.

Consideramos que todos los esfuerzos dirigidos al examen de estudios científicos, experiencias adquiridas y análisis de información, concentrados en asegurar un mejor futuro para el diseño y funcionamiento de nuevas generaciones de "lavadores", pueden en gran medida contribuir, a que éstos sistemas sean considerados como un método equivalente aprobado, de comprobada eficacia; y de esta manera no se penalice a quienes hayan adoptado medidas por adelantado.

Panama continuará participando en todas estas deliberaciones, contribuyendo con su apoyo de manera decidida y diligente a la industria marítima, y ejecutando medidas equilibradas que sean necesarias para el cumplimiento con las prescripciones de la OMI en relación a la calidad del medio ambiente y la eficiencia operativa de los buques."

ITEM 17

Statement by the delegation of Japan

"Thank you, Chair,

We're delighted to inform the Committee that Japan deposited its instrument to accede the Hong Kong Convention on 27 March.

Japan would like to emphasize the importance of the early entry into force of the Convention, in terms of ensuring safe and environmentally sound recycling of ships, as well as promoting sustainable development of maritime industry through facilitating smooth withdrawals of old vessels.

Needless to say, given that shipping and ship recycling are international industries, any challenges regarding ship recycling need to be addressed in global manner, rather than regional manner.

The Hong Kong Convention is the only global solution. Therefore, it is imperative to increase the momentum towards the early entry into force of the Hong Kong Convention.

To this end, Japan, in cooperation with the IMO Secretariat, held an international seminar on ship recycling at the IMO Headquarters last Friday. More than 200 people participated in the seminar and we reaffirmed the importance of the early entry into force of the Hong Kong Convention as the global solution.

Ladies and Gentlemen, Japan calls for the IMO Member States to conclude the HKC at their earliest opportunity.

In 2019, the 10th anniversary of the HKC which was adopted in 2009, six IMO Member States including Japan concluded the HKC.

To maintain and increase this momentum, all the relevant stakeholders should undertake necessary actions to bring the Hong Kong Convention into force without any further delay.

Thank you, Chair."

Statement by the delegation of Malta

"This delegation thanks the Secretariat for document 74/INF.16 providing an update on the calculation of recycling capacity for meeting the entry-into-force conditions of the Hong Kong Convention.

We would also like to thank Japan, the Secretariat and all speakers and participants, for a very fruitful seminar on ship recycling organized on 10 May 2009 at the IMO Headquarters.

This delegation is pleased to announce that Malta has deposited with the Secretary General, its Instrument of Accession to the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.

Malta recognizes the significant value of this Convention, being the only international instrument, which addresses on a global level the control of hazardous substances on board ships, and the environment and working conditions at the world's ship recycling facilities. We attribute great importance for ships, at the end of their operating life, to be recycled in a safe and environmentally sustainable manner.

This year marks a decade since the adoption of the Convention. We encourage further action to be taken to move even closer towards meeting the entry into force criteria, and look forward to a swift entry force of the Hong Kong Convention."

Statement by the observer of ICS

"ICS congratulates Japan on its accession to the Hong Kong Convention. ICS remains fully committed to supporting the entry into force of the Convention; which remains the only instrument capable of ensuring a global level playing field for the recycling of ships from cradle to cradle; and the realization of which is now closer than at any time since it's signing a decade ago, and calls on Member States, recognizing the need for balance between shipping and recycling tonnage, to ratify the Convention at the soonest opportunity in order to bring into full effect."
