



THE REPUBLIC OF LIBERIA
LIBERIA MARITIME AUTHORITY

Marine Notice

POL-009
Rev. 07/20

TO: ALL SHIPOWNERS, OPERATORS, AND MASTERS OF LIBERIAN FLAG VESSELS, AND RECOGNIZED ORGANIZATIONS

SUBJECT: Implementation of Revised Annex VI, Regulations for the Prevention of Air Pollution from Ships, of MARPOL

Reference: (a) **Maritime Regulation 2.37**
(b) **MARPOL, Consolidated Edition 2011**
(c) **Marine Operations Note 10-2009**

Supersedes: Marine Notice POL-009, dated 02/18

The following changes have been included: **Revokes Marine Operations Note 02/2018**

The following changes have been included:

- a. Paragraph 12.5.6, corrected paragraph 11.5.2 to 12.5.2 and paragraph 11.5.3 to 12.5.3;
- b. Paragraph 11 under APPLICABILITY is amended to provide exemption for ships not normally engaged in international voyages;
- c. Clarification under APPLICABILITY that an EEDI Technical File is required for new ships;
- d. Included a new section 3.0 on 'Trials for Ship Emission Reduction and Control Technology Research';
- e. Paragraph 4.2.1 is corrected for the requirement of initial survey of ships, section 4.2.2 provides clarification on the reduction factor to be applied, section 4.2.3 and 4.2.4 clarifies that the SEEMP and collection and reporting of fuel oil consumption data is applicable to ships of 5,000 GT gross tonnage and above engaged on international voyages;
- f. Added NOx Tier III requirements for ships operating in the Baltic Sea or the North Sea ECAs in paragraph 12.2.3;
- g. Added a new paragraph 12.2.10 on reduction of NOx emissions using Exhaust Gas Recirculation (EGR);
- h. Added new paragraph 12.3.4 on carriage of fuel oil with sulphur content exceeding 0.5%;
- i. Added a new paragraph 12.3.10 related to approval of Exhaust Gas Cleaning System (EGCS) as an equivalent/alternative arrangement;
- j. Added a new paragraph 12.3.11 related to the Ship Implementation Plan;

- k. Added a new paragraph 13.5 related to reporting of availability of compliant fuel oil by Member States; and new paragraph 13.6 regarding notifying the Organization of non-availability of compliant fuel oil;
- l. Added information in paragraph 14.7 on guidance on best practices for fuel oil purchasers/users of fuel oil and reporting to the Organization where fuel oil suppliers have failed to meet the requirements;
- m. Added a new section 17.0 on EU MRV and IMO DCS – CO2 Air Emissions

PURPOSE:

The purpose of this Marine Notice is to provide guidance on the implementation of the revised Annex VI, Regulations for the Prevention of Air Pollution from Ships, of MARPOL, including its amendments.

MARPOL Annex VI was ratified by Liberia on 27 August 2002. Annex VI entered into force and became effective on 19 May 2005. The revised MARPOL Annex VI was adopted by the Maritime Environment Protection Committee (MEPC) of the IMO in October 2008, and entered into force on 1 July, 2010. The revised Annex VI was further amended by MEPC Resolution 203(62) and entered into force on 01 January 2013; and MEPC Resolution 278(70) which enters into force on 1 March 2018.

The Revised Annex VI as amended by Resolutions MEPC 190(60), 194(61), 202(62), 203(62), 217(63), 247(66), 251(66), 258(67), 278(70), 280(70):

- include significant and progressive limits for Sulphur Oxide (SO_x);
- include progressive reductions in Nitrogen Oxide (NO_x) emissions from marine engines;
- addresses emissions of Particulate Matter (PM);
- introduces the concept of Emission Control Area (ECA) for both SO_x and PM or NO_x or all three types of emissions.
- requires ships with rechargeable systems and equipment containing Ozone Depleting Substances (ODS) to maintain a list of these systems and to maintain an ODS record book.
- requires the application of the **NO_x Technical Code 2008, as amended**, to each marine diesel engine to which Regulation 13 of revised Annex VI applies.
- requires all ships operating in an ECA to develop and carry written instructions showing how fuel changeover is done;
- requires all tankers carrying crude oil to have on board and implement an approved Volatile Organic Compounds (VOC) Management Plan;
- places new controls on marine diesel engines installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000;
- introduces new Chapter 4 (Energy Efficiency), including the development and implementation of a Ship Energy Efficiency Management Plan (SEEMP);
- introduces survey requirements for issuance of an International Energy Efficiency (IEE) Certificate for ships to which new Chapter 4 of the revised MARPOL Annex VI applies;
- amends the Appendix I of the revised Annex VI (form of supplement to the International Air Pollution Prevention (IAPP) Certificate) to precisely document all the amendments;
- Introduces periodic audits of every Party by the IMO to verify compliance with and implementation of the revised MARPOL Annex VI; and
- Introduces a data collection system for fuel oil consumption of ships which entered into force on 1 March 2018.

APPLICABILITY:

The revised Annex VI applies to all ships, except where expressly provided otherwise in Regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21 and 22 of this Annex. As examples:

1. Under Regulation 13, the control of emissions of Nitrogen Oxides (NO_x) only applies to each marine diesel engine of more than 130 kW installed on a ship; and each marine diesel engine of more than 130 kW that undergoes a major conversion on or after 1 January 2000;
2. Under Regulation 13, the control of emissions of NO_x applies to a marine diesel engine of more than 5,000 kW and a per cylinder displacement at or above 90 L installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, provided that an approved method for that engine has been certified by an Administration of a Party;
3. Under Regulation 3, revised Annex VI does not apply to any emission necessary for the purpose of securing the safety of a ship or saving life at sea; or any emission resulting from damage to a ship or its equipment, after all reasonable precautions have been taken to prevent or minimize the emission;
4. Under Regulation 3, emissions directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources are exempted from this Annex;
5. Under Regulation 5, the survey requirements for issuance of an IAPP Certificate apply to ships of 400 gross tons and above and every fixed and floating drilling rig and other platforms;
6. Under Regulation 5 and 19, the requirements for Energy Efficiency and survey requirements for issuance of an IEE Certificate apply to ships of 400 gross tons and above;
7. Under Regulation 15, the requirement to have on board and implement a VOC Management Plan is only applicable to oil tankers carrying crude oil;
8. Under Regulation 20 and 21, the calculation of Attained and Required EEDI applies to new ships; and new and existing ships which have undergone a major conversion which is so extensive, that the ship is regarded by the Administration as a newly constructed ship.
9. Under Regulations 20 and 21, the calculation of Attained and Required EEDI does not apply to ships which have non-conventional propulsion (except cruise passenger ships having non-conventional propulsion and LNG carriers having conventional or non-conventional propulsion, delivered after 1 September 2019) and to cargo ships having ice-breaking capability.
10. Under Regulation 19, Chapter 4 of revised Annex VI does not apply to ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion.
11. Under Regulation 19.2, taking into account recommendation in [MEPC.1/Circ.863](#), a ship 400 gross tons and above which is not normally engaged on international voyages but which, in exceptional circumstances, is required to undertake a single international voyage, may be exempted by the Administration from any of the requirements in chapter 4 of MARPOL Annex VI.

12. Under Regulation 22A which entered into force on 1 March 2018, collection and reporting of ship fuel oil consumption data does not apply to ships below 5,000 gross tonnage.

Ships are defined in Article 2 of MARPOL as a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms.

Each diesel engine which is required to comply with Regulation 13 (Nitrogen Oxides) of revised Annex VI must be issued an Engine International Air Pollution Prevention (EIAPP) Certificate and a NO_x Technical File.

Each ship which is required to comply with chapter 4 (Energy Efficiency) of revised Annex VI must be issued with an IEE Certificate and, for new ships, an EEDI Technical File.

Annex VI applies to any type of fuel used on board, including gas, heavy fuel oil, diesel oil and gas oil for main and auxiliary engines, boilers, diesel engines, and gas turbines.

1.0 Definitions

For the purpose of the revised MARPOL Annex VI the following definitions apply:

- 1.1 **A similar stage of construction:** The stage at which:
 - .1 construction identifiable with a specific ship begins; and
 - .2 assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.
- 1.2 **Continuous feeding:** The process whereby waste is fed into a combustion chamber without human assistance while the incinerator is in normal operating conditions with the combustion chamber operative temperature between 850°C and 1200°C.
- 1.3 **Emission:** Any release of substances, subject to control by revised Annex VI from ships into the atmosphere or sea (includes ODS, NO_x, SO_x, VOC and shipboard incineration).
- 1.4 **Emission Control Area:** An area where the adoption of special mandatory measures for emissions from ships is required to prevent, reduce and control air pollution from NO_x or SO_x and particulate matter or all three types of emissions, and their attendant adverse impacts on human health and the environment. Emission control areas include those listed in, or designated under, Regulations 13 and 14 of the revised Annex VI and under this Marine Notice.
- 1.5 **Fuel Oil:** Any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including gas, distillate and residual fuels.
- 1.6 **Installations:** In relation to Regulation 12 of revised Annex VI (Ozone-depleting substances), means the installation of systems, equipment, including portable fire-extinguishing units, insulation, or other material on a ship, but excludes the repair or recharge of previously installed systems, equipment, insulation, or other material, or recharge of portable fire-extinguishing units.

- 1.7 **Installed:** a marine diesel engine that is or is intended to be fitted on a ship, including a portable auxiliary marine diesel engine, only if its fuelling, cooling, or exhaust system is an integral part of the ship. A fuelling system is considered integral to the ship only if it is permanently affixed to the ship. This definition includes a marine diesel engine that is used to supplement or augment the installed power capacity of the ship and is intended to be an integral part of the ship.
- 1.8 **Marine diesel engine:** Any reciprocating internal combustion engine operating on liquid or dual fuel, to which Regulation 13 of revised Annex VI (Nitrogen Oxides) applies, including booster/compound systems if applied. In addition, a gas fueled engine installed on a ship constructed on or after 1 March 2016 or a gas fueled additional or non-identical replacement engine installed on or after that date is also considered as a marine diesel engine.
- 1.9 **Major conversion:** In relation to Regulation 13 of revised Annex VI (Nitrogen oxides), means a modification on or after 1 January 2000 of a marine diesel engine that has not already been certified to the standards set forth in paragraph 3 (Tier I), 4 (Tier II), or 5.1.1 (Tier III) of this Regulation where:
- .1 the engine is replaced by a marine diesel engine or an additional marine diesel engine is installed, or
 - .2 any substantial modification*, as defined in the **NOx Technical Code 2008**, as amended, is made to the engine, or
 - .3 the maximum continuous rating of the engine is increased by more than 10% compared to the maximum continuous rating of the original certification of the engine.

***Substantial modification:**

- For engines installed on ships constructed on or after 1 January 2000, *substantial modification* means any modification to an engine that could potentially cause the engine to exceed the applicable emission limit set out in Regulation 13 of revised Annex VI. Routine replacement of engine components by parts specified in the Technical File that do not alter emission characteristics shall not be considered a “substantial modification” regardless of whether one part or many parts are replaced.

For engines installed on ships constructed before 1 January 2000, substantial modification means any modification made to an engine which increases its existing emission characteristics established by the Simplified Measurement method as described in 6.3 of the **NOx Technical Code 2008, as amended**, in excess of the allowances set out in 6.3.11 of that Code. These changes include, but are not limited to, changes in its operations or in its technical parameters (e.g., changing camshafts, fuel injection systems, air systems, combustion chamber configuration, or timing calibration of the engine). The installation of a certified Approved Method pursuant to Regulation 13.7.1.1 or certification pursuant to Regulation 13.7.1.2 of the revised Annex VI is not considered to be a substantial modification for the purpose of the application of Regulation 13.2 of the revised Annex VI.

- 1.10 **Major conversion:** In relation to chapter 4 of revised Annex VI (Energy Efficiency), means a conversion of a ship:
- .1 which substantially alters the dimensions, carrying capacity or engine power of the ship; or
 - .2 which changes the type of the ship; or
 - .3 the intent of which in the opinion of the Administration is substantially to prolong the life of the ship; or
 - .4 which otherwise so alters the ship that, if it were a new ship, it would become subject to relevant provisions of the present Convention not applicable to it as an existing ship; or
 - .5 which substantially alters the energy efficiency of the ship and includes any modifications that could cause the ship to exceed the applicable required EEDI as set out in Regulation 21 of revised Annex VI.
- 1.11 **NO_x Technical Code:** The Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines adopted by Conference resolution 2, as may be amended by the Organization, provided that such amendments are adopted and brought into force in accordance with the provisions of article 16 of the present Convention concerning amendment procedures applicable to an appendix to an Annex.
- 1.12 **Ozone-depleting substances:** Controlled substances defined in paragraph 4 of article 1 of the Montreal Protocol on Substances that Deplete the Ozone Layer, 1987, listed in Annexes A, B, C or E to the said Protocol in force at the time of application or interpretation of this annex.
- Ozone-depleting substances that may be found on board ship include, but are not limited to:
- Halon 1211 Bromochlorodifluoromethane
 - Halon 1301 Bromotrifluoromethane
 - Halon 2402 1,2-Dibromo-1,1,2,2-tetrafluoroethane (a/k/a Halon 114B2)
 - CFC-11 Trichlorofluoromethane
 - CFC-12 Dichlorodifluoromethane
 - CFC-113 1,1,2-Trichloro-1,2,2-trifluoroethane
 - CFC-114 1,2-Dichloro-1,1,2,2-tetrafluoroethane
 - CFC-115 Chloropentafluoroethane
- 1.13 **Sludge oil:** Sludge from the fuel or lubricating oil separators, waste lubricating oil from main or auxiliary machinery, or waste oil from bilge water separators, oil filtering equipment or drip trays.
- 1.14 **Shipboard incineration:** The incineration of wastes or other matter on board a ship, if such wastes or other matter were generated during the normal operation of that ship.
- 1.15 **Shipboard incinerator:** A shipboard facility designed for the primary purpose of incineration.
- 1.16 **Ships constructed:** Ships the keels of which are laid or that are at a similar stage of construction.

- 1.17 **Existing ship:** A ship which is not a new ship
- 1.18 **New ship:** A ship:
- .1 for which the building contract is placed on or after 1 January 2013; or
 - .2 in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2013; or
 - .3 the delivery of which is on or after 1 July 2015.
- 1.19 **Tanker:** In relation to Regulation 15 (VOC's) of revised Annex VI is an oil tanker as defined in Regulation 1 of Annex I of MARPOL or a chemical tanker as defined in Regulation I of Annex II of MARPOL.
- 1.20 **Tanker:** In relation to chapter 4 (Energy Efficiency) of revised Annex VI is an oil tanker as defined in Regulation 1 of Annex I of MARPOL or a chemical tanker or an NLS tanker as defined in Regulation 1 of Annex II of MARPOL.
- 1.21 **Bulk carrier:** A ship which is intended primarily to carry dry cargo in bulk, including such types as ore carriers as defined in Regulation 1 of chapter XII of SOLAS 74 (as amended) but excluding combination carriers.
- 1.22 **Gas carrier:** A cargo ship, other than an LNG carrier constructed or adapted and used for the carriage in bulk of any liquefied gas.
- 1.23 LNG carrier means a cargo ship constructed or adapted and used for the carriage in bulk of liquefied natural gas (LNG).
- 1.24 **Container ship:** A ship designed exclusively for the carriage of containers in holds and on deck.
- 1.25 **General cargo ship:** A ship with a multi-deck or single deck hull designed primarily for the carriage of general cargo. This definition excludes specialized dry cargo ships, which are not included in the calculation of reference lines for general cargo ships, namely livestock carrier, barge carrier, heavy load carrier, yacht carrier, nuclear fuel carrier.
- 1.26 **Refrigerated cargo carrier:** A ship designed exclusively for the carriage of refrigerated cargoes in holds and includes ships dedicated to the carriage of fruit juice in refrigerated cargo tanks.
- 1.27 **Combination carrier:** A ship designed to load 100% deadweight with both liquid and dry cargo in bulk.
- 1.28 **Passenger ship:** A ship which carries more than 12 passengers.
- 1.29 **Cruise passenger ship:** A passenger ship not having a cargo deck, designed exclusively for commercial transportation of passengers in overnight accommodations on a sea voyage.
- 1.30 **Ro-ro cargo ship (vehicle carrier):** A multi deck roll-on-roll-off cargo ship designed for the carriage of empty cars and trucks.

- 1.31 **Ro-ro cargo ship:** A ship designed for the carriage of roll-on-roll-off cargo transportation units.
- 1.32 **Cargo ship having ice-breaking capability:** A cargo ship which is designated to break level ice independently with a speed of at least 2 knots when the level ice thickness is 1.0 m or more having ice bending strength of at least 500 kPa.
- 1.33 **Attained Energy Efficiency Design Index (EEDI):** The EEDI value achieved by an individual ship in accordance with Regulation 20 of the revised Annex VI.
- 1.34 **Required EEDI:** The maximum value of attained EEDI that is allowed by Regulation 21 of revised annex VI for the specific ship type and size.
- 1.35 **Conventional propulsion:** A method of propulsion where a main reciprocating internal combustion engine(s) is the prime mover and coupled to a propulsion shaft either directly or through a gear box.
- 1.36 **Non-conventional propulsion:** A method of propulsion, other than conventional propulsion, including diesel-electric propulsion, turbine propulsion, and hybrid propulsion systems.
- 1.37 A **ship delivered on or after** 1 September 2019 means a ship:
- .1 for which the building contract is placed on or after 1 September 2015; or
 - .2 in the absence of a building contract, the keel of which is laid, or which is at a similar stage of construction, on or after 1 March 2016; or
 - .3 the delivery of which is on or after 1 September 2019.
- 1.38 **Calendar year:** The period from 1 January until 31 December inclusive.
- 1.39 **Company:** 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 operation of the ship from the owner of the ship and who on assuming such responsibility has agreed to take over all the duties and responsibilities imposed by the International Management Code for the Safe Operation of Ships and for Pollution Prevention, as amended.
- 1.40 **Distance travelled:** Distance travelled over ground.

2.0 Approval of equivalents/alternatives; notification to IMO

- 2.1 The Administration will consider proposals to permit any fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by revised Annex VI if such fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods are at least as effective in terms of emissions reductions as that required by revised Annex VI, including any of the standards set forth in Regulations 13 (Nitrogen Oxides) and 14 (Sulphur Oxides). The ship's Classification Society must confirm to this Administration that the proposed alternative fitting, material, appliance or apparatus is at least as effective as that required by Annex VI.

2.2 The Administration will take into account [Guidelines for Exhaust Gas Cleaning \(EGC\) Systems](#), pertaining to equivalent for complying with the standard in Regulation 14 (Sulphur Oxides).

2.3 The Administration will communicate the particulars of the equivalent/alternative arrangement to the International Maritime Organization in accordance with revised Annex VI.

3.0 Trials for Ship Emission Reduction and Control Technology Research

The Administration may, in co-operation with other Administrations as appropriate, issue an exemption from specific provisions of revised Annex VI for a ship to conduct trials for the development of ship emission reduction and control technologies and engine design programmes. Such an exemption shall only be provided if the applications of specific provisions of the Annex or the revised NO_x Technical Code 2008 could impede research into the development of such technologies or programmes. A permit issued under this regulation shall not exempt a ship from the reporting requirement under regulation 22A and shall not alter the type and scope of data required to be reported under regulation 22A. A permit for such an exemption shall only be provided to the minimum number of ships necessary.

4.0 Surveys

4.1 Every Liberian flag ship of 400 gross tons and above and every fixed and floating drilling rig (including mobile offshore drilling units) and other platforms (including floating production and/or storage units) shall be subject to the following periodic surveys by an authorized (Recognized Organization) RO (see section 4.1.7) to ensure that the equipment, systems, fittings, arrangements and material fully comply with applicable requirements of chapter 3 (Control of Emissions) of revised Annex VI:

- .1 An initial survey before the ship is put into service or before the IAPP Certificate is issued for the first time;
- .2 An annual survey within three months before or after each anniversary date of the certificate;
- .3 A renewal survey at intervals not exceeding five years, except where Regulation 9.2, 9.5, 9.6 or 9.7 of revised Annex VI is applicable;
- .4 An intermediate survey within three months before or after the second anniversary date or within three months before or after the third anniversary date of the certificate which shall take the place of one of the annual surveys specified in .2 of this paragraph.
- .5 An additional survey either general or partial, according to the circumstances, shall be made whenever any important repairs or renewals are made that conform with the provisions of revised Annex VI or after a repair resulting from an accident or a defect that substantially affects the efficiency or completeness of the equipment covered under revised Annex VI.
- .6 Surveys of engines and equipment for compliance with Regulation 13, Nitrogen Oxides, shall be conducted in accordance with the [NO_x Technical Code 2008, as amended](#) (See section 4.2 below).

- .7 Liberia has authorized certain classification societies as Recognized Organizations (RO) for conducting surveys and issuing certificates on its behalf under revised Annex VI. The list of RO's is available on the Registry's web site: <http://www.liscr.com/recognized-organizations>.
 - .8 When a RO determines that the condition of the equipment does not correspond substantially with the particulars of the certificate, they shall ensure that corrective action is taken and shall immediately notify the Administration. If such corrective action is not taken, the certification will be withdrawn by the Administration.
- 4.2 Every Liberian flag ship to which chapter 4 (Energy Efficiency) of revised Annex VI applies shall also be subject to the surveys specified below, taking into account Guidelines on Survey and certification of the EEDI in **MEPC Resolution 254(67), as amended**:
- .1 an initial survey before a new ship (defined in 1.18 above) is put into service and before the IEE Certificate is issued. The survey shall verify that the ship's attained EEDI is in accordance with the requirements in chapter 4 (Energy Efficiency) of revised Annex VI, and that the SEEMP is on board;
 - .2 a general or partial survey, according to the circumstances, after a major conversion of a new ship, to ensure that the attained EEDI is recalculated as necessary and meets the requirements of revised Annex VI with the reduction factor applicable to the ship type and size of the converted ship in the phase corresponding to the date of contract or keel laying or delivery determined for the original ship in accordance with 1.18 above.
 - .3 in cases where the major conversion of a new or existing ship is so extensive that the ship is regarded by the Administration as a newly constructed ship, the Administration shall determine the necessity of an initial survey on attained EEDI. Such a survey, if determined necessary, shall ensure that the attained EEDI is calculated and meets the requirements of revised Annex VI, with the reduction factor applicable corresponding to the ship type and size of the converted ship at the date of the contract of the conversion, or in the absence of a contract, the commencement date of the conversion. The survey shall also verify that the SEEMP is on board and for a ship of 5,000 gross tonnage and above engaged on international voyages which is required to collect and report ship fuel oil consumption data, has been revised appropriately, to reflect a major conversion in those cases where the major conversion affects data collection methodology and/or reporting processes;
 - .4 for existing ships, the verification of the requirement to have a SEEMP on board shall take place at the first intermediate or renewal survey identified in 3.1 above, whichever is first, on or after 1 January 2013; and
 - .5 The Administration shall ensure that for each ship of 5,000 gross tonnage and above engaged on international voyages which is required to collect and report fuel oil consumption data, Part II of the SEEMP includes a description of the methodology that will be used to collect fuel oil consumption data and the processes that will be used to report the data to the ship's Administration. A *Confirmation of Compliance* (in the format in *Annex IV*) shall be provided to and retained on board the ship. See section 15.8 for guidance.

4.3 In addition to surveys referred to in 3.1 and 3.2, this Administration may also authorize ROs to carry out the following surveys and other related functions relating:

- to marine diesel engines in accordance with the **NO_x Technical Code 2008, as amended**; and
- to ships in accordance with the Guidelines on Survey and Certification of the EEDI in **MEPC Resolution 254(67)**, as amended

- .1 Pre-certification survey for issuance of Engine International Air Pollution Prevention (EIAPP) Certificate to marine diesel engines to which Regulation 13 (Nitrogen Oxides) of revised Annex VI applies.
- .2 Preliminary certification of the attained EEDI at the design stage.
- .3 Final verification of the attained EEDI at sea trials.
- .4 Verification of the attained EEDI for a new or existing ship that has undergone a major conversion, so extensive, that it is regarded by the Administration as a new ship.
- .5 Initial certification survey after an engine is installed on a ship but before it is placed into service.
- .6 Periodical/intermediate surveys conducted as part of surveys referred to in 3.1 and 3.2.
- .7 Approval of engine NO_x Technical Files and validation of ship's EEDI Technical Files.

5.0 Alterations to equipment

5.1 Equipment shall be maintained to conform to the provisions of revised Annex VI. No changes shall be made in equipment, systems, fittings, arrangements or material covered by the surveys under section 3.0 without the express approval of this Administration or an authorized RO acting on behalf of this Administration. However, the direct replacement of such equipment and fittings with equipment and fittings that conform with the provisions of revised Annex VI is permitted, subject to an additional survey prescribed in 3.1 and 3.2 above.

6.0 Reporting accidents or defects

6.1 The Master or owner of a Liberia flag ship shall report any accident to a ship or a defect which substantially affects the efficiency or completeness of its equipment covered by revised Annex VI of MARPOL, at the earliest opportunity to this Administration or the RO responsible for issuing the relevant certificate on its behalf. A corrective action plan acceptable to the Administration or its authorized RO shall also be developed.

7.0 Agreements with other Administrations

7.1 The Liberian Administration may establish agreements with other Administrations for mutual acceptance of EIAPP, IAPP and IEE Certificates.

8.0 Issuance and form of International Air Pollution Prevention (IAPP) Certificate, International Energy Efficiency (IEE) Certificate and Statement of Compliance related to fuel oil consumption reporting.

- 8.1 An IAPP Certificate shall be issued after the successful completion of initial and renewal surveys in 3.1 above to:
- .1 any ship of 400 gross tons and above engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties; and
 - .2 platforms and drilling rigs engaged in voyages to waters under the sovereignty or jurisdiction of other Parties.
- 8.2 An IEE Certificate for the ship shall be issued after a survey in accordance with 3.2 above to any ships of 400 gross tons and above before that ship may engage in voyages to ports or offshore terminals under the jurisdiction of other parties.
- 8.3 For existing ships that have not undergone a major conversion after 01 January 2013, the IEE Certificate shall be issued not later than the first intermediate or renewal MARPOL Annex VI chapter 2 survey, whichever is the sooner, on or after 1 January 2013, i.e. a survey connected to an intermediate/renewal survey of the IAPP Certificate. The IEE Certificate will be issued following verification the SEEMP is on board. (The IAPP Certificate survey windows will therefore also become the IEE Certificate initial survey date for existing ships).
- 8.4 Upon receipt of reported data pursuant to regulation 22A.3 of revised Annex VI of MARPOL in accordance with part II of the SEEMP and the standardized format prescribed in *attachment 5*, the classification society verifier or non-classification society verifier shall verify the reported data in accordance with **MEPC Resolution 292(71)** and, upon satisfactory review, the Administration will issue a *Statement of Compliance* (in the format in *Annex III*) related to fuel oil consumption to the ship no later than five months from the beginning of the calendar year.
- 8.5 Upon receipt of reported data pursuant to regulations 22A.4, 22A.5 or 22A.6 of revised Annex VI of MARPOL in accordance with part II of the SEEMP and the standardized format prescribed in *Attachment 5*, the classification society verifier or non-classification society verifier shall promptly determine whether the data has been reported in accordance with **MEPC Resolution 292(71)** and, upon satisfactory review, the Administration will issue a *Statement of Compliance* (in the format in *Annex III*) related to fuel oil consumption to the ship at that time.
- 8.6 Authorized ROs and other Parties with which this Administration has an agreement may issue the IAPP and IEE Certificates.
- 8.7 Upon transfer of the ship to the Liberian flag, a new certificate shall only be issued when the RO issuing the new certificate or the Administration is fully satisfied that the ship is in compliance with the requirements to chapter 3 (Control of Emissions) and chapter 4 (Energy Efficiency) of revised Annex VI or MARPOL.

- 8.8 The form of the IAPP and IEE Certificate and Statement of Compliance related to fuel oil consumption reporting is specified in Appendix I, Appendix VIII and new Appendix X to revised MARPOL Annex VI, which is also included in the *Annexes* to this Notice.
- 9.0 Duration and validity of the IAPP, IEE Certificate and Statement of Compliance related to fuel oil consumption reporting**
- 9.1 IAPP Certificates shall remain valid for a period not exceeding five (5) years unless otherwise withdrawn for non-compliance. No extension of the IAPP Certificate is permitted except that if a ship is not in port at the time of expiry of the IAPP Certificate or in the port state in which it is to be surveyed, this Administration may extend the Certificate for a period of not more than three (3) months. Such extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port State in which it is to be surveyed, and then only in cases where it is deemed proper and reasonable to do so. After arrival at the place at which the ship is to be surveyed, it shall not be entitled by virtue of such extension to leave that port without having obtained a new IAPP Certificate.
- 9.2 An IAPP Certificate shall cease to be valid in any of the following circumstances:
- .1 if the surveys and inspections are not carried out within the periods specified in 3.1 above;
 - .2 if an additional survey has not been carried out after significant alterations have taken place to the equipment, systems, fittings, arrangements or material to which Annex VI applies without the express approval of the Administration, except that direct replacement is permitted; or
 - .3 upon transfer of the ship to the flag of another State. Within three (3) months after the transfer has taken place, the RO or the previous Administration shall, as soon as possible, transmit to the new Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.
- 9.3 The IEE Certificate shall be valid throughout the life of the ship, subject to 8.4 below.
- 9.4 An IEE Certificate issued under revised Annex VI shall cease to be valid in any of the following circumstances:
- .1 if the ship is withdrawn from service or if a new certificate is issued following major conversion of the ship; or
 - .2 upon transfer of the ship to the flag of another State. Within three (3) months after the transfer has taken place, the RO or the previous Administration shall, as soon as possible, transmit to the new Administration copies of the Certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.
- 9.5 The *Statement of Compliance* pursuant to paragraph 8.4 above shall be valid for the calendar year in which it is issued and for the first five months of the following calendar year. The *Statement of Compliance* pursuant to paragraph 8.5 above shall be valid for the calendar year in which it is issued, for the following calendar year, and for the first five months of the subsequent calendar year. All *Statements of Compliance* shall be kept on board for at least the period of their validity.

10.0 Port State control on operational requirements [MEPC Resolution 321\(74\)](#)

- 10.1 A ship, when in a port or an offshore terminal under the jurisdiction of another Party to revised Annex VI, is subject to the inspection by officers duly authorized by such Party concerning operational requirements under revised Annex VI, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of air pollution from ships.
- 10.2 Owners, operators and Masters of Liberian flag ships shall report port State control actions to this Administration forthwith so as to arrange the attendance of a Liberian Nautical Inspector or to take other appropriate action in a timely manner.
- 10.3 In relation to chapter 4 (Energy Efficiency) of revised Annex VI, any port State inspection is limited to verifying, when appropriate, that there is a valid Statement of Compliance related to fuel oil consumption reporting and IEE Certificate on board.

11.0 Emission Control Areas (ECA)

- 11.1 The revised annex VI introduced the concept of Emission Control Areas (ECA) for more stringent NO_x reductions, similar to those previously established for SO_x Emission Control Areas (SECA) found in the previous version of Annex VI. An ECA may be designated for SO_x and PM, or NO_x, or all three types of emissions from ships. That is, an ECA can be defined as one that regulates SO_x and PM – commonly referred to as a SO_x-ECA, or one that regulates NO_x – commonly referred to as a NO_x-ECA, or one that regulates both SO_x/PM and NO_x emissions – commonly referred to as an ECA.
- 11.2 As defined in revised Annex VI, an ECA means an area where the adoption of special mandatory measures for emissions from ships is required to prevent, reduce and control air pollution from NO_x or SO_x and PM or all three types of emissions and their attendant adverse impacts on human health and the environment.
- 11.3 Current ECA's are those listed in, or designated under Regulations 13 and 14 of revised Annex VI and include:
 - .1 the North American ECA (refer to Appendix VII of the revised Annex VI for coordinates) which entered into effect on 01 August 2012;
 - .2 the United States Caribbean Sea ECA (refer to amended Appendix VII of the revised Annex VI for coordinates) which entered into force on 1 January 2013 and into effect from 1 January 2014;
 - .3 ships constructed on or after 1 January 2016 shall comply with the NO_x emission limits specified in Regulation 13.5.1.1 of the revised MARPOL Annex VI, when operating within the North American and United States Caribbean Sea ECA's; and
 - .4 the Baltic Sea and North Sea SECAs established under the previous Annex VI of MARPOL continue to remain in effect, designated as SO_x-ECAs; and will be designated as ECAs with effect from 1 January 2021.
 - .5 Ships constructed on or after 1 January 2021 shall comply with the NO_x emission limits specified in Regulation 13.5.1.1 of the revised MARPOL Annex VI, when in

the Baltic Sea or the North Sea ECAs.

12.0 Control of emissions

The following emissions from Liberian flag ships are controlled under revised Annex VI:

12.1 Ozone-Depleting Substances

- .1 Deliberate emissions of ozone-depleting substances are prohibited. Deliberate emissions include emissions occurring in the course of maintenance, servicing, repairing or disposing of systems or equipment. Deliberate emissions do not include minimal releases associated with the recapture or recycling of an ozone-depleting substance.
- .2 Installations that contain ozone-depleting substances, other than hydrochlorofluorocarbons (HCFCs), are prohibited:
 - a) on ships constructed on or after 19 May 2005; or
 - b) in the case of ships constructed before 19 May 2005, which have a contractual delivery date of the equipment to the ship on or after 19 May 2005 or, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship on or after 19 May 2005.
- .3 Installations that contain HCFCs shall be prohibited:
 - a) on ships constructed on or after 1 January 2020; or
 - b) in the case of ships constructed before 1 January 2020, which have a contractual delivery date of the equipment to the ship on or after 1 January 2020 or, in the absence of a contractual delivery date, the actual delivery of the equipment to the ship on or after 1 January 2020.
- .4 The substances referred to in .2 and .3 above and equipment containing such substances shall be delivered to appropriate reception facilities when removed from ships.
- .5 Each ship which is required to have an IAPP certificate shall maintain a list of equipment containing ozone-depleting substances.
- .6 Each ship which is required to have an IAPP Certificate that has rechargeable systems that contain ozone-depleting substances shall maintain an *ozone-depleting substances (ODS) record book*. The ODS record book with instructions is available from Office of the Deputy Commissioner, c/o Liberian International Ship & Corporate Registry, 8619 Westwood Center Dr., Suite 300, Vienna, Virginia 22182, USA.
- .7 Entries in the ozone-depleting substances record book shall be recorded in terms of mass (kg) of substance and shall be completed without delay on each occasion, in respect of the following:
 - a) recharge, full or partial, of equipment containing ozone-depleting substances;

- b) repair or maintenance of equipment containing ozone-depleting substances;
- c) discharge of ozone-depleting substances to the atmosphere:
 - o deliberate; and
 - o non-deliberate
- d) discharge of ozone-depleting substances to land-based reception facilities; and
- e) supply of ozone-depleting substances to the ship.

12.2 Nitrogen Oxides (NO_x)

- .1 Regulation 13 of revised Annex VI concerns NO_x emissions from marine diesel engines and shall apply to (*Refer to Attachment 1*):
 - a) each marine diesel engine with a power output of more than 130 kW installed on a ship;
 - b) each marine diesel engine with a power output of more than 130 kW which undergoes a major conversion on or after 1 January 2000 except when demonstrated to the satisfaction of the Administration that such engine is an identical replacement to the engine that it is replacing; and
 - c) each marine diesel engine with a power output of more than 5000 kW and a per cylinder displacement at or above 90 L which is installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, provided that an approved method for that engine has been certified by an Administration of a Party.
- .2 This Regulation does not apply to:
 - a) emergency marine diesel engines, engines installed in life boats or for any equipment intended to be used solely in case of emergency;
 - b) engines used solely to drive machinery dedicated to exploration, exploitation and associated offshore processed seabed mineral resources.
- .3 The revised Annex VI provides for progressive reductions in NO_x emissions from marine diesel engines. The new limits represent a reduction of approximately 20% over the previous Annex VI limit (Tier I) and apply to ships constructed on or after 1 January 2011 (Tier II limits). For ships constructed on or after 1 January 2016 operating in the North American ECA or the United States Caribbean Sea ECA, for ships constructed on or after 1 January 2021 operating in the Baltic Sea or the North Sea ECAs and for ships operating in a NO_x ECA constructed on or after the date of adoption of such an emission control area, or a later date as may be specified in the amendment designating the NO_x ECA a further reduction of around 80% will apply (Tier III limits). Outside a designated ECA, the Tier II limits apply. This three tier approach is set out below:

- **Tier I**
for marine diesel engines installed on a ship constructed on or after 1 January 2000 and prior to 1 January 2011, the allowable NOx emissions are:
 - 17.0 g/kWh when n is less than 130 rpm;
 - 45.0 n^(-0.2) g/kWh when n is 130 rpm or more but less than 2000 rpm;
 - 9.8 g/kWh when n is 2,000 rpm or more.

- **Tier II**
for marine diesel engines installed on a ship constructed on or after 1 January 2011, the allowable NOx emissions are:
 - 14.4 g/kWh when n is less than 130 rpm;
 - 44.0 n^(-0.23) g/kWh when n is 130 rpm or more but less than 2,000 rpm;
 - 7.7 g/kWh when n is 2,000 rpm or more.

- **Tier III**
for marine diesel engines, the allowable NOx emissions while operating in NOx-ECAs are:
 - 3.4 g/kWh when n is less than 130 rpm;
 - 9.0 n^(-0.2) g/kWh when n is 130 rpm or more but less than 2,000 rpm;
 - 2.0 g/kWh when n is 2,000 rpm or more

.4 For a major conversion as defined in paragraph 1.9 of this notice 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 Regulation 13 in force at the time of the replacement or addition of the engine shall apply. In the case of non-identical replacement engines only, if it is not possible for such a replacement engine to meet the Tier III limits, when operating in an area designated under regulation 13.6 of revised Annex VI of MARPOL, then that replacement engine shall meet the Tier II limits with the endorsement of the Administration. **MEPC Resolution 230(65)**, sets forth the criteria which the Administration will use to determine when it is not possible for a non-identical replacement engine to meet the Tier III limits.

.5 Beginning 1 September 2017, the tier and on/off status of marine diesel engines installed on board a ship which are certified to both Tier II and Tier III or which are certified to Tier II only shall be recorded in the engineering log book or other record book suitable for that purpose at entry into and exit from an emission control area designated under regulation 13.6 of MARPOL Annex VI, or when the on/off status changes within such an area, together with the date, time and position of the ship.

.6 Recreational vessels under 24 meters in length, vessels with a combined nameplate propulsion power of less than 750 kW with design or construction limitations that would prohibit compliance, or recreational vessels constructed prior to 1 January 2021 of less than 500 GT and 24 meters or more in length may be exempted by the Administration from compliance with the Tier III standards.

- .7 Notwithstanding 11.2.1 a) of this section, a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or 90 L installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 shall comply with the emission limits set under Tier I standards, provided that an approved method for that engine has been certified by an Administration of a Party and notification of such certification has been submitted to the IMO by the certifying Administration.
- .8 The approved method is required to be applied no later than the first renewal survey that occurs 12 months or more after the deposit of the notification to the IMO. If the shipowner or operator of the ship on which an approved method is to be installed can demonstrate to the satisfaction of the Administration that the approved method was not commercially available despite best efforts to obtain it, the approved method shall be installed on the ship no later than the next annual survey of that ship that falls after the approved method is commercially available.
- .9 With regard to a marine diesel engine with a power output or more than 5,000 kW and a per cylinder displacement at or above 90 L installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, the IAPP Certificate shall from 1 March 2016, for a marine diesel engine to which 12.2.7 above applies, indicate one of the following taking into account guidance provided in **MEPC Resolution 258(67)**:
- a) an approved method has been applied, as confirmed by a survey using the verification procedure specified in the approved method file, including appropriate notation on the ship's IAPP Certificate of the presence of the approved method;
 - b) the engine has been certified as complying with the Tier I, II or III standards above;
 - c) an approved method is not yet commercially available as described in 12.2.7 above; or
 - d) an approved method is not applicable.
- .10 One method for reducing NOX emissions is to use Exhaust Gas Recirculation (EGR), which is an internal engine process resulting in a NOx reduction which will meet the requirements of the regulation. By means of this process, condensate of exhaust gas will be generated and discharged as bleed-off water, which should be handled differently depending on the fuel oil Sulphur content. EGR may also be used as a Tier II compliance option.

The discharge of EGR bleed-off water shall be conducted in accordance with **Guidelines for the Discharge of EGR Bleed-Off Water**:

- when using fuel oil not complying with the relevant limit value in regulation 14 of revised MARPOL Annex VI; should be retained onboard in a holding tank. However, it may be discharged to the sea provided the ship is en-route outside polar waters, ports, harbours or estuaries and provided the bleed-off water meets the washwater discharge criteria under the **Guidelines for Exhaust Gas Cleaning (EGC) Systems** and samples are provided to the Administration, upon request.

- when using fuel oil complying with the relevant limit value in regulation 14 of revised MARPOL Annex VI, should either:
 - a) meet the same washwater discharge criteria for EGR bleed-off water using non-compliant fuel (including documenting, monitoring and recording, as appropriate), in which case, may be discharged either the ship is en route outside polar waters, port, harbours or estuaries, or when the EGR system is operated in polar waters, ports, harbours or estuaries; or
 - b) may be discharged en route outside polar waters, ports, harbours or estuaries, provided its oil content is monitored to not exceed 15 ppm by an oil content meter that is type approved in accordance with **Resolution MEPC. 107(49)**, as amended.

The following documents shall be retained on board the ship as appropriate and should be available for surveys as required:

- manual for EGR bleed-off discharge system and EGR Record book approved by a Recognized Organization on behalf of the Administration;
 - certificates of type approval of oil content meters (15 ppm alarm); and
 - operating and maintenance manuals of oil content meters (15 ppm alarm)
- .11 Issuance of an EIAPP certificate is not required for engines to which an approved method has been applied. However, an ‘Approved Method File’ containing information describing the Approved method, means of survey and onboard verification procedure will be required to accompany the engine throughout its life onboard the ship.
- .12 Every marine diesel engine and ship subject to revised Annex VI shall have a NOx Technical File and an EEDI Technical File, as applicable to that ship, approved and verified respectively by an authorized RO on behalf of the Administration.
- .13 **The NOx Technical Code 2008**, as amended, shall be applied in the certification, testing and measurement procedures for the standards set forth in 12.2.3 and 12.2.7 above.

12.3 Sulphur oxides (SOx)

- .1 Regulation 14 of revised Annex VI provides a progressive reduction in SOx and PM emissions from ships (*Refer to Attachment 2*).
- .2 This regulation does not apply to:
 - a) emergency marine diesel engines, engines installed in life boats or for any equipment intended to be used solely in case of emergency;

- b) engines uses solely to drive machinery dedicated to exploration, exploitation and associated offshore processed seabed mineral resources.
- .3 The Sulphur content of any fuel oil used on board ships when operating outside a designated SO_x ECA, shall not exceed the following limits:
- a) 3.5% m/m on or after 1 January 2012; and
 - b) 0.50% m/m on and after 1 January 2020.
- .4 The Sulphur content of any fuel oil carried for use on board ships when operating outside a designated SO_x ECA, shall not exceed 0.50% m/m on and after 1 March 2020.
- .5 The Sulphur content of any fuel oil used on board ships when operating within a designated SO_x ECA, shall not exceed 0.10% m/m on and after 1 January 2015.
- .6 In accordance with European Union (EU) Directive 2005/33/EC, all vessels, regardless of flag, are required to use marine fuels with a maximum sulphur content of 0.1 %, while at berth in EU ports. This requirement applies to any use of fuel in auxiliary engines, main engines, boilers, or any other type of combustion machinery. (Refer to [reference \(c\)](#) above for details).
- .7 Sulphur content of fuel oils must be documented by the supplier as required by Regulation 18 of revised Annex VI and section 13 of this Notice.
- .8 Ships using separate fuel oils to comply with regulation 14.4 of revised MARPOL Annex VI and entering or leaving an ECA must carry a written procedure showing how the fuel oil change-over is to be done, allowing sufficient time for the fuel oil service system to be fully flushed of all fuel oils exceeding the applicable Sulphur content prior to entry into an ECA. The volume of low Sulphur fuel oils in each tank as well as the date, time, and position of the ship when any fuel-oil-change-over operation is completed prior to the entry into an ECA or commenced after exit from such an area, shall be recorded in the engineering log book or other record book suitable for that purpose.
- .9 In order to achieve the relevant Sulphur limit in regulation 14 of revised MARPOL Annex VI, the Administration will consider proposals to permit
- a) an exhaust gas cleaning (EGC) system, approved the Administration in accordance [Guidelines for Exhaust Gas Cleaning \(EGC\) Systems](#); or
 - b) other equivalent means, approved by the Administration.
- .10 The Administration does not consider the installation of an EGC system as a major conversion, so extensive on new and existing ships under revised MARPOL Annex VI. In order to approve the installation of an EGC system as an equivalent/alternative arrangement for compliance with regulation 14, the Recognized Organization shall submit to the Administration:
- a) the following documents approved by the Recognized Organization of behalf of the Administration, which shall be retained on board the ship as appropriate and shall be available for surveys as required

- EGC system - Technical Manual
 - SOx Emissions Compliance Plan
 - Onboard Monitoring Manual
 - EGC Record Book which may be an electronic recording system
- b) SOx Emissions Compliance Certificate for Scheme A installation
- c) Survey checklist used to verify compliance upon installation

The EGC system shall also be subject to survey at initial, annual/intermediate and renewals surveys by the Recognized Organization on behalf of the Administration.

- .11 **MEPC.1-Circ.878 - Guidance on the Development of a Ship Implementation Plan (SIP) for the Consistent Implementation of the 0.50% Sulphur Limit under MARPOL Annex VI** includes a sample format for the ship implementation plan, potential impacts of low sulphur fuel oil on machinery systems and guidance for fuel oil tank cleaning.

The plan is not mandatory and is not subject to approval or endorsement by the Administration or the Recognized organization. However, the Administration and port State control may consider the preparatory actions described in the ship implementation plan, such as modifications to fuel oil systems, fuel oil capacity and segregation capability, tank cleaning and bunkering plans, complemented with the record of implementation, when verifying compliance and determining any action to take.

12.4 Volatile Organic Compounds (VOCs)

- .1 Tankers which are subject to control of emissions of VOCs in ports or terminals under the jurisdiction of a party, shall be provided with a vapor collection systems approved by an authorized RO on behalf of the Administration taking into account MSC/Circ.585, Standards for vapour emission control systems.
- .2 Ports or terminals which have installed vapor emission control systems in accordance with revised Annex VI, may accept tankers that are not fitted with vapor collection systems for a period of three (3) years after the effective date for such systems identified to IMO.
- .3 Each tanker carrying crude oil, to which regulation 15.1 of revised MARPOL Annex VI applies, shall have on board and implement a VOC management plan approved either directly by this Administration or by a Recognized Organization on behalf of this Administration. Refer to Marine Notice POL-010 for details.

12.5 Shipboard incineration

- .1 Shipboard incineration shall only be allowed in a shipboard incinerator.
- .2 Shipboard incineration of the following substances shall be prohibited:
- a) residues of cargoes subject to MARPOL Annex I, II or III or related contaminated packing materials;
 - b) polychlorinated biphenyls (PCBs);

- c) garbage, as defined by MARPOL Annex V, containing more than traces of heavy metals;
 - d) Refined petroleum products containing halogen compounds;
 - e) Sewage sludge and sludge oil either of which is not generated on board ship; and
 - f) Exhaust gas cleaning system residues.
- .3 Shipboard incineration of polyvinyl chlorides (PVCs) shall be prohibited, except in shipboard incinerators for which IMO Type Approval Certificates have been issued (Type Approval certificates issued in accordance with MEPC Resolution 59(33), as amended by MEPC Resolution 92(45); or MEPC Resolution 76(40) as amended by MEPC Resolution MEPC 93(45); or MEPC Resolution 244(66).
- .4 Shipboard incineration of sewage sludge and sludge oil generated during normal operations of the ship may also take place in the main or auxiliary power plant or boilers, but in those cases, shall not take place inside ports, harbors and estuaries.
- .5 Each incinerator on a ship constructed on or after 1 January 2000 or incinerator that is installed on board a ship on or after 1 January 2000:
- a) Shall meet the requirements in Appendix IV of revised Annex VI and shall be approved in accordance with MEPC Resolution 76(40), as amended by MEPC Resolution 93(45); or MEPC Resolution 244(66) as applicable by the Administration or an authorized RO or Party recognized by the Administration.
 - b) Shall be provided with a manufacturer's operating manual that provides guidance on operating the incinerator within the limits described in Appendix IV to revised Annex VI; and, operating personnel must be trained and capable of implementing the guidance provided therein.
 - c) Shall have means to continuously monitor the incinerator flue gas temperature and waste shall not be fed into a continuous-feed incinerator when the temperature is below the minimum allowed temperature of 850 degrees C. For batch-loaded incinerators, the unit shall be designed so that the temperature in the combustion chamber shall reach 600 degrees C within five (5) minutes after start-up.
- .6 Subject to the provisions of paragraphs 12.5.2 and 12.5.3 in this notice, incinerators installed before 1 January 2000 may continue in service, provided no changes have been made affecting operating limits or emission characteristics and shall only be used to incinerate materials that are specified by the incinerator manufacturer.

13.0 Fuel oil availability

- 13.1 A ship shall notify the Administration and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil.
- 13.2 If a ship cannot purchase or obtain compliant fuel oil, it shall present to the relevant party of the destination port a record of the actions taken to attempt to achieve compliance; and

- 13.3 Provide evidence that it attempted to purchase compliant fuel oil in accordance with its voyage plan and, if it was not made available where planned, that attempts were made to locate alternative sources for such fuel oil and that despite best efforts to obtain compliant fuel oil, no such fuel oil was made available for purchase.
- 32.4 A vessel should not be required to deviate from its intended voyage or to delay unduly the voyage in order to achieve compliance.
- 13.5 In accordance with **MEPC.1/Circ.880**, Member States are urged to report availability of compliant fuel well in advance of 1 January 2020 to enable shipowners and operators to gain experience on the carriage and use of the new fuel oils on their ships and with proposed implementation plans. Shipowners and operators may obtain information regarding fuel oil availability under the public area of the IMO GISIS link:
<https://gisis.imo.org/Public/Default.aspx>
- 13.6 In accordance with Regulation 18.2.5 of revised MARPOL Annex Vi, the Administration will notify the Organization when a ship has presented evidence of the non-availability of compliant fuel oil. Shipowners and owners may obtain information regarding reports of fuel oil non-availability under the public area of the IMO GISIS link:
<https://gisis.imo.org/Public/Default.aspx>

14.0 Fuel Oil Quality

- 14.1 In addition to requirements limiting the Sulphur content of fuel oil, MARPOL revised Annex VI contains requirements preventing the incorporation of potentially harmful substances, and in particular waste streams (e.g. chemical waste), into fuel oils.
- 14.2 Details of fuel oil delivered to and used on board Liberian flag ships shall be recorded by means of a Bunker Delivery Note provided by the supplier. Bunker delivery notes must contain the following information:
- Name and IMO number of receiving ship;
 - Bunkering Port;
 - Date of commencement of delivery;
 - Name, address, and telephone number of marine fuel oil supplier;
 - Product name(s);
 - Quantity in metric tons;
 - Density at 15°C, Kg/m³; and
 - Sulphur content (% m/m)
- 14.3 The bunker delivery note shall be retained on board for a period of three (3) years after the fuel is delivered on board and be readily available for inspection by port State control authorities and this Administration.
- 14.4 The bunker delivery note shall include a signed declaration from the fuel oil supplier(s) representative that the fuel oil supplied is free from inorganic acid and does not include any added substance or chemical waste which either jeopardizes the safety of ships, adversely affects the performance of the machinery, is harmful to personnel, or contributes overall to additional air pollution; and that the Sulphur content of the fuel oil supplied does not exceed the permissible limits or from 1 January 2019, the purchasers limit value in combination with

an equivalent means of compliance.

- 14.5 The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines developed in **Resolution MEPC.182 (59)**, above. The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of bunkering operation on completion of bunkering operations and retained under ship's control until the fuel oil is substantially consumed, but in any case for a period of not less than 12 months from the time of delivery.
- 14.6 Sample bottle labels are to contain the following information:
- .1 Location at which, and the method by which, the sample was drawn
 - .2 Bunkering date
 - .3 Name of bunker tanker/bunker installation
 - .4 Name and IMO number of the receiving ship
 - .5 Signatures and names of the supplier's representative and the ship's representative
 - .6 Details of seal identification
 - .7 Bunker grade
- 14.7 **MEPC.1/Circ.875** provides guidance on best practices for fuel oil purchasers/users for assuring the quality of fuel oil quality on board ships and MEPC.1/Circ.875/Add.1 provides guidance on best practice for fuel oil suppliers for assuring the quality of fuel oil delivered to ships. The following action should be taken, if the suppliers bunker delivery note and/or representative FO sample is not in compliance with regulations 14 or 18 of revised Annex VI and IMO guidelines:
- .1 In States that are not Parties to MARPOL Annex VI, the details shall be documented by the ship (Master/Chief Engineer) in the engineering log book or other record book suitable for that purpose.
 - .2 In States that are Parties to MARPOL Annex VI, the details shall be brought to the attention of the Administration, in addition to being recorded in the engineering log book or other record book suitable for that purpose.
 - .3 In accordance with regulation 18.9.6 of revised MARPOL Annex VI, the Administration shall inform the Organization for transmission to Parties and Member States of the Organization of all cases where fuel oil suppliers have failed to meet the requirements. Shipowners and owners may obtain information regarding reports of failure of fuel oil suppliers to meet the requirements specified in regulation 14 or 18 of revised Annex VI under the public area of the IMO GISIS link:
<https://gisis.imo.org/Public/Default.aspx>

15.0 Energy Efficiency for Ships

- 15.1 MEPC Resolution 203(62) amended the revised Annex VI to include chapter 4 (Energy Efficiency) intended to improve energy efficiency for ships through a set of technical performance standards, which would result in reduction of emissions of any substances that originate from fuel oil and its combustion process, including those already controlled by Annex VI.

- 15.2 New chapter 4 of the revised Annex VI applies to all ships of 400 gross tons and above. It makes mandatory the Energy Efficiency Design Index (EEDI) for new ships, the SEEMP for all ships, except as noted in 14.8, and enters into force on 01 January 2013.
- 15.3 However, under new Regulation 19, the Administration may waive the requirement for new ships of 400 gross tons and above from complying with the EEDI requirements. The waiver does not apply to ships above 400 gross tons for which the building contract is placed four (4) years after 01 January 2013.
- 15.4 The EEDI applies only to certain types of ships and does not apply to ships with non-conventional propulsion (except cruise passenger ships having non-conventional propulsion and LNG carriers having conventional or non-conventional propulsion, delivered after 1 September 2019) and to cargo ships having ice-breaking capability. Chapter 4 of revised Annex VI does not apply to ships not propelled by mechanical means, and platforms including FPSOs and FSUs and drilling rigs, regardless of their propulsion.
- 15.5 The new chapter 4 of revised Annex VI represents the first ever mandatory global greenhouse (GHG) gas regime for an international industry sector or transport mode.

15.6 Required EEDI

- .1 The EEDI requires a minimum energy efficiency level, expressed in grams of carbon dioxide (CO₂) per capacity mile (example: tonne mile) for a specific ship type and size (deadweight).
- .2 The required EEDI shall be calculated for each:
- a) new ship;
 - b) new ship which has undergone a major conversion; and
 - c) new ship or existing ship which has undergone a major conversion so extensive that the Administration considers it to be a newly constructed ship and which falls into one or more of the categories in Regulations 2.25 to 2.31, 2.33 to 2.35, 2.38 and 2.39.
- .3 The required EEDI shall be calculated by applying a reduction factor specified in Table 1 of Regulation 21 to the corresponding reference line value calculated in accordance with Regulation 21.3, as amended by **MEPC Resolution 251(66)** for the specific ship type and size (deadweight).

15.7 Attained EEDI

- .1 The attained EEDI shall be calculated for each:
- a) each new ship;
 - b) each new ship which has undergone a major conversion; and
 - c) each new ship or existing ship which has undergone a major conversion so extensive that the Administration considers it to be a newly constructed ship and which falls into one or more of the categories in Regulations 2.25 to 2.35, 2.38 and 2.39.

- .2 The attained EEDI shall be less than or equal to the required EEDI and shall be calculated taking into account guidelines in **MEPC Resolution 245(66)**, as amended.
- .3 The attained EEDI shall be specific to each ship and shall indicate the estimated performance of the ship in terms of energy efficiency, and be accompanied by the EEDI Technical File that contains the information necessary for the calculation of the attained EEDI and shows the process of calculation.
- .4 The attained EEDI shall be verified based on the EEDI Technical file, either directly by this Administration or by a Recognized Organization on behalf of this Administration as part of the survey requirements in 3.2 above.

15.8 Ship Energy Efficiency Management Plan (SEEMP)

- .1 Each ship shall keep on board a ship specific SEEMP in the form specified in *Attachment 3* of this Marine Notice. Such ships exclude platforms (including FPSOs and FSUs) and drilling rigs, regardless of their propulsion, and any other ship without means of propulsion. The SEEMP may form part of the Ship's Safety Management System (SMS).
- .2 The SEEMP shall be developed taking into account guidelines in **MEPC Resolution 282(70)**. No later than 31 December 2018, in the case of a ship of 5,000 gross tonnage and above engaged in international voyages, Part II of the SEEMP shall include a description of the methodology that will be used to collect fuel oil consumption data and the processes that will be used to report the data to the ship's Administration.
- .3 Beginning 1 March 2018, Part II of the SEEMP shall be submitted in English for review and verification to the classification society verifier or the non-classification society verifier listed in the **updated Appendix 1 on the Regulations and Standards Department (formally Technical) tab / MARPOL Annex VI under Maritime on the Registry's website: <https://www.liscr.com/marpol-annex-vi>**

Upon satisfactory verification, the Administration will issue a *Confirmation of Compliance* in the format in *Annex IV*.

16.0 **IMO Collection and Reporting of Ship Fuel Oil Consumption Data (IMO DCS)**

- 16.1 Beginning with calendar year 2019, each ship of 5,000 gross tonnage and above engaged in international voyages shall collect the data specified in *Attachment 4* of this Marine Notice, for that and each subsequent calendar year or portion thereof, as appropriate, according to the methodology included in the SEEMP.
- 16.2 Except as provided for in sub-paragraphs .4, .5 and .6 below, at the end of each calendar year, the ship shall aggregate the data collected in that calendar year or portion thereof, as appropriate.
- 16.3 Except as provided for in sub-paragraphs .4, .5 and .6 below, within three months after the end of each calendar year, the ship shall report to the classification society verifier or the non-classification society verifier, the aggregated value for each datum specified in *Attachment 4* of this Marine Notice, via electronic communication and using the standardized format in *Attachment 5* of this Marine Notice.

- 16.4 In the event of the transfer of a ship from this Administration to another, the ship shall on the day of completion of the transfer or as close as practical thereto report to the classification society verifier or the non-classification society verifier, the aggregated data for the period of the calendar year corresponding to the Administration, as specified in *Attachment 4* of this Marine Notice; and upon prior request of the classification society verifier or , the non-classification society verifier, the disaggregated data.
- 16.5 In the event of a change from one Company to another, the ship shall on the day of completion of the change or as close as practical thereto report to the classification society verifier or the non-classification society verifier, the aggregated data for the portion of the calendar year corresponding to the Company, as specified in *Attachment 4* of this Marine Notice; and upon request of the classification society verifier or the non-classification society verifier, the disaggregated data.
- 16.6 In the event of change from the Administration to another and from one Company to another concurrently, sub-paragraph .4 above shall apply.
- 16.7 The classification society verifier or the non-classification society verifier shall verify the data taking into account the Guidelines developed by the Organization in **MEPC Resolution 292(71)**. Additional documentation to facilitate data verification may include the following, as well as other documentation that the classification society verifier or the non-classification society verifier deems relevant:
- .1 a copy of the ship's Data Collection Plan;
 - .2 summaries of bunker delivery notes (BDNs), in sufficient detail to show that all fuel oil consumed by the ship is accounted for (see sample form of BDN summary set out in *Attachment 6* of this Marine Notice);
 - .3 summaries of disaggregated data of fuel oil consumption, distance travelled and hours underway, in a format specified by the Administration (see sample form of data summary set out in *Attachment 7* of this Marine Notice);
 - .4 information to demonstrate that the ship followed the Data Collection Plan set out in part II of its SEEMP, including information on data gaps and how they were filled as well as how the event that caused the data gap was resolved; and
 - .5 copies of documents containing information on the amount of fuel oil consumption, distance travelled and hours underway for the ship's voyages during the reporting period (e.g. the ship's official logbook, oil record book, BDNs, arrival/noon/departure reports, etc.).
- 16.8 Except as provided for in sub-paragraphs .4, .5 and .6 above, the disaggregated data that underlies the reported data noted in *Attachment 4* of this Marine Notice for the previous calendar year shall be readily accessible for a period of not less than 12 months from the end of that calendar year and be made available to the classification society verifier or the non-classification society verifier upon request.

- 16.9 The Administration shall ensure that the reported data noted in *Attachment 4* of this Marine Notice by its registered ships of 5,000 gross tonnage and above engaged in international voyages are transferred to the IMO Ship Fuel Oil Consumption Database via electronic communication and using the Extensible Markup Language (XML) format not later than one month after issuing the Statements of Compliance of these ships.
- 17.0 European Union Monitoring, Reporting, Verification (EU MRV) Regulation and IMO Data Collection System (DCS) – CO2 Air Emissions**
- 17.1 The EU MRV Regulation entered into force on 1 July 2015, and it requires ship owners and operators to annually monitor, report and verify CO₂ emissions for vessels larger than 5,000 gross tonnage (GT) calling at any EU and EFTA (Norway and Iceland) port. Data collection takes place on a per voyage basis and started 1 January 2018. The EU regulation includes a provision that the Commission shall review the regulation and shall, if appropriate, propose amendments to this regulation in order to ensure alignment with an international agreement (IMO DCS).
- 17.2 The Administration actively participated in the development of the IMO DCS and closely followed the development with the EU MRV Regulation in order to determine the most efficient way forward to serve our Liberian flag Shipowners. There are several common requirements between the two schemes, including monitoring, verification and annual data reporting. Considering the common requirements of the EU MRV and IMO DCS schemes, there are efficiencies to be gained in implementation both schemes by combining key compliance aspects to the extent possible. This will avoid unnecessary duplication, reduce administrative burdens and thus provide a cost-efficient, streamlined and quality focused service for shipowners covering both regulations.
- 17.3 Considering there are various entities that have been accredited under the EU MRV scheme, including Classification Societies recognized by Liberia, the Administration is offering shipowners and operators with Liberian registered ships two options for a single service provider to cover both EU MRV and IMO DCS:
- .1 Classification Societies recognized by Liberia that have achieved EU MRV verifier accreditation (Classification Society Verifiers); or
 - .2 Independent EU MRV accredited verifiers (non-Classification Society Verifiers)
- 17.4 Shipowners have the option to choose either a Classification Society Verifier or a non-Classification Society Verifier. The Verifier will undertake all the verification work covering both the EU MRV and IMO DCS regulations. The Verifier will conduct the complete verification services required for the EU MRV, including issuance of the approval documentation and reporting. The Verifier will conduct the verification services required for the IMO DCS and the Administration will issue the approval documentation and report the required data to IMO.
- 17.5 **Updated Appendix 1 on the Regulations and Standards Department (formally Technical) tab / MARPOL Annex VI under Maritime on the Registry's website: <https://www.liscr.com/marpol-annex-vi>** contains the list of Classification Societies recognized by Liberia and independent EU MRV accredited verifiers with whom the Administration has entered into a cooperation agreement for delivering this service. Each

offers shipowners a streamlined and combined compliance service covering both the EU MRV and IMO DCS regulations.

17.6 Compliance Process

The implementation schedule shown in **Appendix 2 on the Regulations and Standards Department (formally Technical) tab / MARPOL Annex VI under Maritime on the Registry's website: <https://www.liscr.com/marpol-annex-vi>**, and in summary the Classification Societies Verifiers recognized by Liberia and non-Classification Society Verifiers will undertake all the necessary work with the exception of the following tasks that will be carried out by the Administration:

- Issuance of SEEMP (Part II) Confirmation of Compliance with MARPOL Annex VI, Regulation 22;
- Issuance of annual fuel oil consumption Statement of Compliance with MARPOL, Annex VI, Regulation 22A;
- On-board verification of Confirmation of Compliance and Statement of Compliance;
- Mandatory annual IMO DCS reporting under MARPOL Annex VI, Regulation 22A.

The Administration's fee for this service is USD375 per ship each year services are performed. The Classification Society Verifier or the non-Classification Society Verifier selected for the combined EU MRV and IMO DCS services will invoice the shipowner/operator directly for this service.

18.0 Implementation management

18.1 Owners/Operators should include appropriate elements of MARPOL Annex VI into their Company's Safety Management System (SMS). Such elements should include requirements regarding:

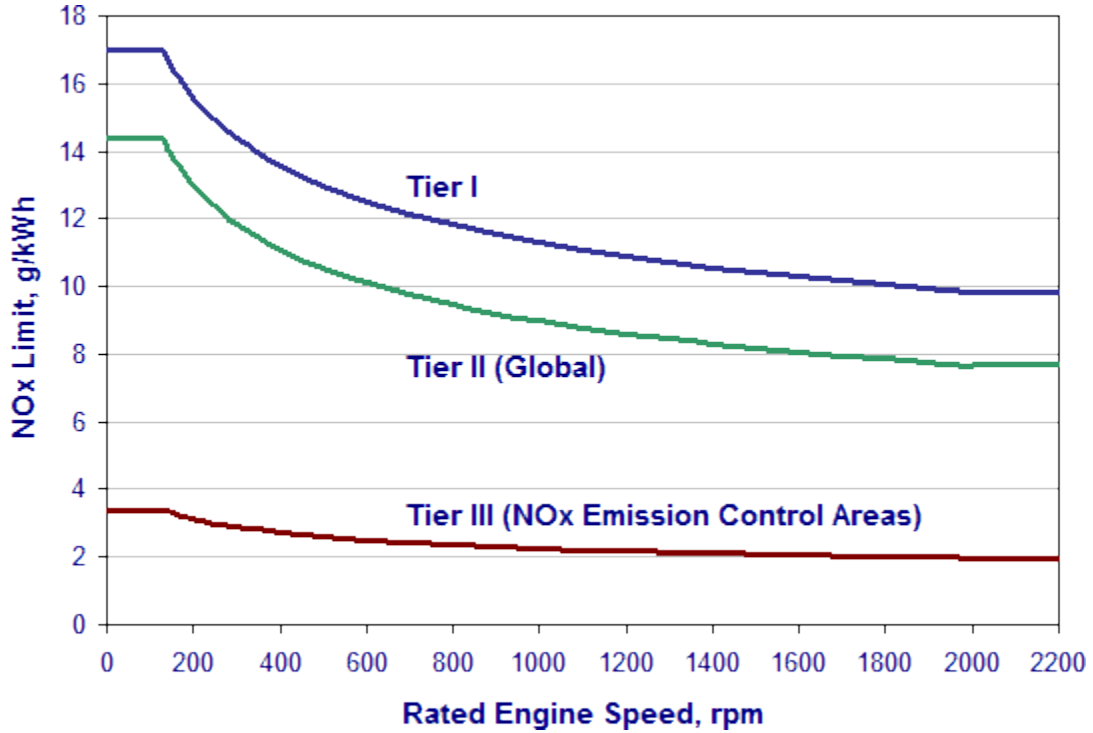
- .1 Nitrogen Oxides (NO_x);
- .2 Sulphur Oxides (SO_x);
- .3 Emission Control Areas (ECAs);
- .4 Ozone Depleting Substances;
- .5 Volatile Organic Compounds (VOCs);
- .6 Fuel Oil Quality, including BDN and sampling;
- .7 Incineration, including training and prohibitions; and
- .8 Energy efficiency management including collection and reporting of fuel oil consumption data in accordance with Part II of the SEEMP

ATTACHMENT 1

MARPOL Revised Annex VI - NO_x Emission Limits

Tier	Date	NO _x Limit, g/kWh		
		n < 130	130 ≤ n < 2000	n ≥ 2000
Tier I	2000	17.0	$45 \cdot n^{-0.2}$	9.8
Tier II	2011	14.4	$44 \cdot n^{-0.23}$	7.7
Tier III	2016*	3.4	$9 \cdot n^{-0.2}$	1.96

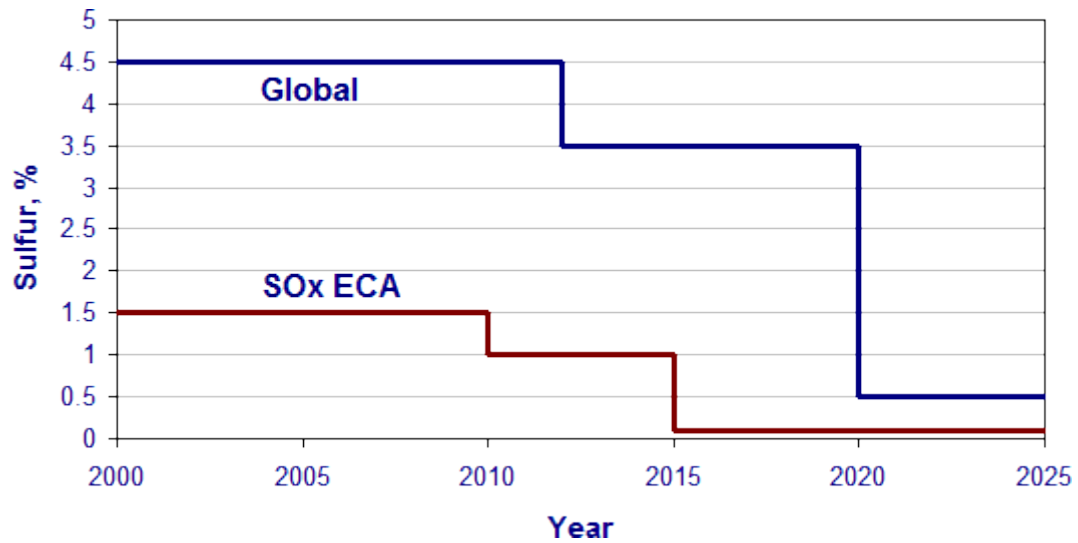
* In NO_x Emission Control Areas (Tier II standards apply outside ECAs).



ATTACHMENT 2

MARPOL Revised Annex VI - Fuel Sulfur Limits

Date	Sulfur Limit in Fuel (% m/m)	
	SOx ECA	Global
2000	1.5%	4.5%
2010.07	1.0%	
2012	0.1%	3.5%
2015		
2020		0.5%



ATTACHMENT 3

A SAMPLE FORM OF A SHIP EFFICIENCY ENERGY MANAGEMENT PLAN (Part I of SEEMP)

Name of Vessel:		GT:	
Vessel Type:		Capacity:	

Date of Development:		Developed By:	
Implementation Period:	From: Until:	Implemented By:	
Planned Date of Next Evaluation:			

1 MEASURES

Energy Efficiency Measures	Implementation (including the starting date)	Responsible Personnel
Weather Routeing	<Example> Contracted with [Service providers] to use their weather routeing system and start using on-trial basis as of 1 July 2012.	<Example> The master is responsible for selecting the optimum route based on the information provided by (Service providers).
Ship Optimization	While the design speed (85% MCR) is 19.0 kt, the maximum speed is set at 17.0 kt as of 1 July 2012.	The master is responsible for keeping the ship's speed. The log-book entry should be checked every day.

2 MONITORING

Description of monitoring tools

3 GOAL

Measurable goals

4 EVALUATION

Procedures of evaluation

**A SAMPLE FORM OF A SHIP FUEL OIL CONSUMPTION DATA COLLECTION PLAN
(Part II of SEEMP)**

1 Ship particulars

Name of Ship	
IMO Number	
Company	
Flag	
Ship type	
Gross tonnage	
NT	
DWT	
EEDI (If applicable)	
Ice class	

2 Record of revision of Fuel Oil Consumption Data Collection Plan

Date of revision	Revised provision

3 Ship engines and other fuel oil consumers and fuel oil types used

	Engines or other fuel oil consumers	Power	Fuel oil types
1	Type/model of main engine	(KW)	
2	Type/model of auxiliary engine	(KW)	
3	Boiler	(...)	
4	Inert gas generator	(...)	

4 Emission factor

CF is a non-dimensional conversion factor between fuel oil consumption and CO₂ emission in the 2014 *Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships* ([resolution MEPC.245\(66\)](#)), as amended. The annual total amount of CO₂ is calculated by multiplying annual fuel oil consumption and *CF* for the type of fuel.

Fuel oil Type	<i>CF</i> (t-CO ₂ / t-Fuel)
Diesel/Gas oil (e.g. ISO 8217 grades DMX through DMB)	3.206
Light fuel oil (LFO) (e.g. ISO 8217 grades RMA through RMD)	3.151
Heavy fuel oil (HFO) (e.g. ISO 8217 grades RME through RMK)	3.114
Liquefied petroleum gas (LPG) (Propane)	3.000
Liquefied petroleum gas (LPG) (Butane)	3.030
Liquefied natural gas (LNG)	2.750

Fuel oil Type	<i>CF</i> (t-CO ₂ / t-Fuel)
Methanol	1.375
Ethanol	1.913
Other (.....)	

5 Method to measure fuel oil consumption

The applied method for measurement for this ship is given below. The description explains the procedure for measuring data and calculating annual values, measurement equipment involved, etc.

Method	Description

6 Method to measure distance travelled

Description

7 Method to measure hours underway

Description

8 Processes that will be used to report the data to the Administration

Description

9 Data quality

Description

ATTACHMENT 4

Information to be submitted to the IMO Ship Fuel Oil Consumption Database

Identity of the ship

IMO number

Period of calendar year for which the data is submitted

Start date (dd/mm/yyyy)

End date (dd/mm/yyyy)

Technical characteristics of the ship

Ship type, as defined in regulation 2 of this Annex or other (to be stated)

Gross tonnage (GT)¹

Net tonnage (NT)²

Deadweight tonnage (DWT)³

Power output (rated power⁴) of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW)

EEDI (if applicable)

Ice class⁵

Fuel oil consumption, by fuel oil type⁶ in metric tonnes and methods used for collecting fuel oil consumption data

Distance travelled

Hours underway

¹ Gross tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969.

² Net tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969. If not applicable, note "N/A".

³ DWT means the difference in tonnes between the displacement of a ship in water of relative density of 1025 kg/m³ at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or an organization recognized by it.

⁴ Rated power means the maximum continuous rated power as specified on the nameplate of the engine.

⁵ Ice class should be consistent with the definition set out in the *International Code for ships operating in polar waters (Polar Code)*, (resolutions MEPC.264(68) and MSC.385(94)). If not applicable, note "N/A".

⁶ As defined in the *2014 Guidelines on the method of calculation of the Attained Energy Efficiency Design Index (EEDI) for new ships* (resolution MEPC.245(66), as amended) or other (to be stated).

ATTACHMENT 5

STANDARDIZED DATA REPORTING FORMAT FOR THE DATA COLLECTION SYSTEM

Method used to measure fuel oil consumption ⁹	Other(.....)	Fuel oil consumption (t)
	(Cf ;.....)	
Ethanol (Cf: 1.913)		
Methanol (Cf: 1.375)		
LNG (Cf: 2.750)		
LPG (Butane) (Cf: 3.030)		
LPG (Propane)		
HFO (Cf: 3.114)		
LFO (Cf: 3.151)		
Diesel/Gas Oil (Cf: 3.206)		
Hours underway (h)		
Distance Travelled (nm)		
Auxiliary Engine(s)	Main Propulsion Power	
Power output (rated power) (kW) ⁸		
Ice class ⁷ (if applicable)		
EEDI (if applicable) ⁶		
DWT ⁵		
NT ⁴		
Gross tonnage ³		
Ship type ²		
IMO number ¹		
End date (dd/mm/yyyy)		
Start date (dd/mm/yyyy)		

- ¹ In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1078(28).
- ² As defined in regulation 2 of MARPOL Annex VI or other (to be stated).
- ³ Gross tonnage should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969.
- ⁴ NT should be calculated in accordance with the International Convention on Tonnage Measurement of Ships, 1969. If not applicable, note "N/A".
- ⁵ DWT means the difference in tonnes between the displacement of a ship in water of relative density of 1025 kg/m³ at the summer load draught and the lightweight of the ship. The summer load draught should be taken as the maximum summer draught as certified in the stability booklet approved by the Administration or an organization recognized by it.
- ⁶ EEDI should be calculated in accordance with the *2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index (EEDI) for new ships*, as amended, adopted by resolution MEPC 245(66). If not applicable, note "N/A".
- ⁷ Ice class should be consistent with the definition set out in the *International Code for ships operating in polar waters (Polar Code)*, adopted by resolutions MEPC.264(68) and MSC.385(94)). If not applicable, note "N/A".
- ⁸ Power output (rated power) of main and auxiliary reciprocating internal combustion engines over 130 kW (to be stated in kW). Rated power means the maximum continuous rated power as specified on the nameplate of the engine.
- ⁹ Method used to measure fuel oil consumption: 1: method using BDNs, 2: method using flow meters, 3: method using bunker fuel oil tank monitoring.

ATTACHMENT 6

SAMPLE OF THE BDN SUMMARIES

Date of Operations (dd/mm/yyyy)	Fuel Oil Type/Mass(MT)							Descriptions
	DO/GO	LFO	HFO	LPG(P)	LPG(G)	LNG	Others(C _F)	
① BDN								
09/01/2019								
02/05/2019			150					
08/07/2019								
09/10/2019								
10/12/2019			300					
① Annual Supply Amount	0	0	450	0	0	0	0	
② Correction for the tank oil remainings								
01/01/2019			400					
31/12/2019			200					
② Correction for the tank oil remainings	0	0	200	0	0	0	0	The difference in the amount of the remaining tank oil at the beginning/end of the data collection period.
③ Other corrections								
30/03/2019								
15/09/2019								
31/12/2019								
③ Annual other corrections	0	0	0	0	0	0	0	
Annual Fuel Consumption								
Annual Fuel Consumption (①+②+③)	0	0	650	0	0	0	0	

Explanatory remarks;

If bunker supply /correction data have been recorded in a Company's electronic reporting system, the data is acceptable to be submitted in the existing format instead of submitting the data by this format.

ATTACHMENT 7

SAMPLE OF THE COLLECTED DATA SUMMARIES

Date from (dd/mm/yyyy)	Date to* (dd/mm/yyyy)	Distance Travelled (nm)	Hours Underway (hh:mm)	Fuel Consumption (Metric tons)						
				DO/GO	LFO	HFO	LPG(P)	LPG(B)	LNG	Others(C _F)
01/01/2019		210	24:00	2	3	19	0	0	0	0
02/01/2019		283	24:00	2	0	20	0	0	0	0
03/01/2019		321	24:00	2	0	18	0	0	0	0
04/01/2019		221	24:00	1	0	19	0	0	0	0
05/01/2019		320	18:00	2	0	13	0	0	0	0
06/01/2019		302	24:00	2	0	17	0	0	0	0
07/01/2019		210	24:00	1	0	19	0	0	0	0
08/01/2019		302	24:00	1	0	20	0	0	0	0
09/01/2019		280	24:00	2	0	21	0	0	0	0
10/01/2019		50	01:00	3	0	2	0	0	0	0
11/01/2019		198	24:00	3	0	21	0	0	0	0
.	
.	
.	
30/12/2019		320	24:00	0	0	20	0	0	0	0
31/12/2019		213	24:00	1	0	17	0	0	0	0
Annual Total										

*In the case of daily underlying data, this column would be left in blank.

Explanatory remarks;

If the listed data in the format have been recorded in a Company's electronic reporting system, the data is acceptable to be submitted in the existing format instead of submitting the data by this format.

ANNEX 1
Form of IAPP CERTIFICATE
(Regulation 8)



Office of
Deputy Commissioner
of Maritime Affairs

THE REPUBLIC OF LIBERIA
LIBERIA MARITIME AUTHORITY

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of the Protocol of 1997, as amended by resolution MEPC.176(58) in 2008, to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as “the Convention”) under the authority of the Government of:

THE REPUBLIC OF LIBERIA

(full designation of the country)

by -----

*(full designation of the competent person or organization
authorized under the provisions of the Convention)*

Name of ship	Distinctive number or letters	IMO number	Port of registry	Gross tonnage

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with regulation 5 of Annex VI of the Convention; and
2. That the survey shows that the equipment, systems, fittings, arrangements and materials fully comply with the applicable requirements of Annex VI of the Convention.

This certificate is valid until subject to surveys in accordance with regulation 5 of Annex VI of the Convention.

Completion date of the survey on which this Certificate is based:

Issued at

(Place of issue of certificate)

.....
(Date of issue)

.....
*(signature of duly authorized official
issuing the certificate)*

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by regulation 5 of Annex VI of the Convention, the ship was found to comply with the relevant provisions of that Annex.

Annual survey: Signed:
(Signature of duly authorized official)
Place:
Date:

(Seal or stamp of the authority, as appropriate)

Annual */Intermediate* survey: Signed:
(Signature of duly authorized official)
Place:
Date:

(Seal or stamp of the authority, as appropriate)

Annual */Intermediate* survey: Signed:
(Signature of duly authorized official)
Place:
Date:

(Seal or stamp of the authority, as appropriate)

Annual survey: Signed:
(Signature of duly authorized official)
Place:
Date:

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate

Annual/intermediate survey in accordance with regulation 9.8.3

THIS IS TO CERTIFY that, at an annual/intermediate^{*} survey in accordance with regulation 9.8.3 of Annex VI of the Convention, the ship was found to comply with the relevant provisions of that Annex:

Signed:
(Signature of authorized official)

Place:

Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

Endorsement to extend the certificate if valid for less than 5 years where regulation 9.3 applies

The ship complies with the relevant provisions of the Annex, and this certificate shall, in accordance with regulation 9.3 of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy):

Signed:
(Signature of authorized official)

Place:

Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

Endorsement where the renewal survey has been completed and regulation 9.4 applies

The ship complies with the relevant provisions of the Annex, and this certificate shall, in accordance with regulation 9.4 of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy):

Signed:
(Signature of authorized official)

Place:

Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where regulation 9.5 or 9.6 applies

This certificate shall, in accordance with regulation 9.5 or 9.6* of Annex VI of the Convention, be accepted as valid until (dd/mm/yyyy):

Signed:
(Signature of authorized official)

Place:

Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

Endorsement for advancement of anniversary date where regulation 9.8 applies

In accordance with regulation 9.8 of Annex VI of the Convention, the new anniversary date is (dd/mm/yyyy):

Signed:
(Signature of authorized official)

Place:

Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

In accordance with regulation 9.8 of Annex VI of the Convention, the new anniversary date is (dd/mm/yyyy):

Signed:
(Signature of authorized official)

Place: Date (dd/mm/yyyy):.....

(Seal or stamp of the authority, as appropriate)

* Delete as appropriate.

**SUPPLEMENT TO
INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE
(IAPP CERTIFICATE)**

RECORD OF CONSTRUCTION AND EQUIPMENT

Notes:

1. This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.
2. If the language of the original Record is not English, French or Spanish, the text shall include a translation into one of these languages.
3. Entries In boxes shall be made by inserting either a cross (x) for the answer “yes” and “applicable” or a (-) for the answers “no” and “not applicable” as appropriate
4. Unless otherwise stated, regulations mentioned in this Record refer to regulation of Annex VI of the Convention and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

- 1.1 Name of Ship
- 1.1 IMO Number
- 1.2 Date on which keel was laid or ship was at a similar stage of construction (dd/mm/yyyy).....
- 1.4 Length (L)* metres.....

2 Control of emissions from ships

2.1 *Ozone-depleting substances (regulation 12)*

- 2.1.1 The following fire-extinguishing systems, other systems and equipment containing ozone-depleting substances, other hydrochlorofluorocarbons (HCFCs), installed before 19 May 2005 may continue in service:

System equipment	Location on board	Substance

- 2.1.2 The following fire-extinguishing systems containing HCFCs installed before 11 January 2020 may continue in service:

System equipment	Location on board	Substance

* Completed only in respect of ships constructed on or after 1 January 2016 that are specially designed, and used solely for recreational purposes and to which, in accordance with regulation 13.5.2.1 or regulation 13.5.2.3, the NO_x emission limit as given by regulation 13.5.1.1 will not apply.

2.2 *Nitrogen oxides (NO_x) (regulation 13)*

2.2.1 The following marine diesel engines installed on this ship are in accordance with the requirements of regulation 13, as indicated:

Applicable regulation of MARPOL Annex VI (NTC = NOX Technical Code 2008)		Engine #1	Engine #2	Engine #3	Engine #4	Engine #5	Engine #6
1	Manufacturer and model						
2	Serial number						
3	Use (applicable application cycle(s) – NTC 3.2)						
4	Rated power (kW) (NTC 1.3.11)						
5	Rated speed (RPM) (NTC 1.3.12)						
6	Identical engine installed \geq 1/1/2000 exempted by 13.1.1.2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Identical engine installation date (dd/mm/yyyy) as per 13.1.1.2						
8a	Major Conversion (dd/mm/yyyy)	13.2.1.1 & 13.2.2					
8b		13.2.1.2 & 13.2.3					
8c		13.2.1.3 & 13.2.3					
9a	Tier I	13.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9b		13.2.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9c		13.2.3.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9d		13.2.3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9e		13.7.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10a	Tier II	13.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10b		13.2.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10c		13.2.2 (Tier III not possible)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10d		13.2.3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10e		13.5.2 (Exemptions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10f		13.7.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11a	Tier III (ECA-NO _x only)	13.5.1.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11b		13.2.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11c		13.2.3.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11d		13.7.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	AM*	installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		not commercially available at this survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		not applicable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* Refer to the 2014 Guidelines on the approved method process (resolution MEPC.243(66))

2.3 Sulphur oxides (SO_x) and particulate matter (regulation 14)

2.3.1 When the ship operates outside of an Emission Control Area specified in regulation 14.3, the

ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of:
 - 4.50% m/m (not applicable on or after 1 January 2012); or
 - 3.50% m/m (not applicable on or after 1 January 2020); or
 - 0.50% m/m, and/or
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of:
 - 4.50% m/m (not applicable on or after 1 January 2012); or
 - 3.50% m/m (not applicable on or after 1 January 2020); or
 - 0.50% m/m.....

2.3.2 When the ship operates inside an Emission Control Area specified in regulation 14.3, the ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of:
 - 1.00% m/m (not applicable on or after 1 January 2015); or
 - 0.10% m/m, and/or
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of:
 - 1.00% m/m (not applicable on or after 1 January 2015); or
 - 0.10% m/m

2.4 *Volatile organic compounds (VOCs) (regulation 15)*

- 2.4.1 The tanker has a vapour collection system installed and approved in accordance with MSC/Circ.585.
- 2.4.2.1 For a tanker carrying crude oil, there is an approved VOC Management Plan
- 2.4.2.2 VOC Management Plan approval reference:

2.5 *Shipboard incineration (regulation 16)*

The ship has an incinerator:

- .1 installed on or after 1 January 2000 which complies with
 - .1 resolution MEPC.76(40), as amended*..
 - .2 resolution MEPC.244(66)
- .2 installed before 1 January 2000 which complies with:
 - .1 resolution MEPC.59(33), as amended**
 - .2 resolution MEPC.76(40), as amended*

*As amended by MEPC.93(45)

** As amended by MEPC.92(45)

2.6 *Equivalents (regulation 4)*

The ship has been allowed to use the following fitting, material, appliance or apparatus to be fitted in a ship or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex:

System equipment	Location on board	Substance

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at

(Place of issue of the Record)

.....
(Date of issue)

.....
*(signature of duly authorized official
issuing the Record)*

(Seal or stamp of the authority, as appropriate)

ANNEX II

Form of International Energy Efficiency (IEE) Certificate



Office of
Deputy Commissioner
of Maritime Affairs

THE REPUBLIC OF LIBERIA
LIBERIA MARITIME AUTHORITY

INTERNATIONAL ENERGY EFFICIENCY CERTIFICATE

Issued under the provisions of the Protocol of 1997, as amended by resolution MEPC.203(62), to amend the International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

THE REPUBLIC OF LIBERIA

(full designation of the country)

by -----

*(full designation of the competent person or organization
authorized under the provisions of the Convention)*

Name of ship	Distinctive number or letters	IMO number	Port of registry	Gross tonnage

THIS IS TO CERTIFY:

- 1 That the ship has been surveyed in accordance with regulation 5.4 of Annex VI of the Convention; and
- 2 That the survey shows that the ship complies with the applicable requirements in regulation 20, regulation 21 and regulation 22.

Completion date of survey on which this Certificate is based: (dd/mm/yyyy)

Issued at
(Place of issue of certificate)

(dd/mm/yyyy):
(Date of issue)

.....
(Signature of duly authorized official
issuing the certificate)

(Seal or stamp of the authority, as appropriate)

(IEE Certificate)

RECORD OF CONSTRUCTION RELATING TO ENERGY EFFICIENCY

Notes:

- 1 This Record shall be permanently attached to the IEE Certificate. The IEE Certificate shall be available on board the ship at all times.
2 The Record shall be at least in English, French or Spanish. If an official language of the issuing Party is also used, this shall prevail in case of a dispute or discrepancy.
3 Entries in boxes shall be made by inserting either: a cross (x) for the answers "yes" and "applicable"; or a dash (-) for the answers "no" and "not applicable", as appropriate.
4 Unless otherwise stated, regulations mentioned in this Record refer to regulations in Annex VI of the Convention, and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

- 1.1 Name of ship
1.2 IMO number
1.3 Date of building contract
1.4 Gross tonnage
1.5 Deadweight
1.6 Type of ship *

2 Propulsion system

- 2.1 Diesel propulsion
2.2 Diesel-electric propulsion
2.3 Turbine propulsion
2.4 Hybrid propulsion
2.5 Propulsion system other than any of the above

3 Attained Energy Efficiency Design Index (EEDI)

- 3.1 The Attained EEDI in accordance with regulation 20.1 is calculated based on the information contained in the EEDI technical file which also shows the process of calculating the Attained EEDI.
The Attained EEDI is: grams-CO2/tonne-mile
3.2 The Attained EEDI is not calculated as:
3.2.1 the ship is exempt under regulation 20.1 as it is not a new ship as defined in regulation 2.23

* Insert ship type in accordance with definitions specified in regulation 2. Ships falling into more than one of the ship types defined in regulation 2 should be considered as being the ship type with the most stringent (the lowest) required EEDI. If ship does not fall into the ship types defined in regulation 2, insert "Ship other than any of the ship type defined in regulation 2".

- 3.2.2 the type of propulsion system is exempt in accordance with regulation 19.3

3.2.3 the requirement of regulation 20 is waived by the ship's Administration in accordance with regulation 19.4

3.2.4 the type of ship is exempt in accordance with regulation 20.1

4 Required EEDI

4.1 Required EEDI is: grams-CO₂/tonne-mile

4.2 The required EEDI is not applicable as:

4.2.1 the ship is exempt under regulation 21.1 as it is not a new ship as defined in regulation 2.23

4.2.2 the type of propulsion system is exempt in accordance with regulation 19.3

4.2.3 the requirement of regulation 21 is waived by the ship's Administration in accordance with regulation 19.4

4.2.4 the type of ship is exempt in accordance with regulation 21.1

4.2.5 the ship's capacity is below the minimum capacity threshold in Table 1 of regulation 21.2

5 Ship Energy Efficiency Management Plan

5.1 The ship is provided with a Ship Energy Efficiency Management Plan (SEEMP) in compliance with regulation 22

6 EEDI technical file

6.1 The IEE Certificate is accompanied by the EEDI technical file in compliance with regulation 20.1

6.2 The EEDI technical file identification/verification number

6.3 The EEDI technical file verification date

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at

(Place of issue of the Record)

(dd/mm/yyyy): (Date of issue) (Signature of duly authorized official issuing the Record)

(Date of issue) (Signature of duly authorized official issuing the Record)

(Seal or stamp of the authority, as appropriate)

ANNEX III

Form of Statement of Compliance – Fuel Oil Consumption Reporting
STATEMENT OF COMPLIANCE – FUEL OIL CONSUMPTION REPORTING

Issued under the provisions of the Protocol of 1997, as amended, to amend the International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

REPUBLIC OF LIBERIA

(full designation of the country)

By -----
(full designation of the competent person or organization authorized under the provisions of the Convention)

Particulars of ship¹

Name of ship
Distinctive number or letters
IMO Number²
Port of registry
Gross tonnage

THIS IS TO DECLARE:

1. That the ship has submitted to this Administration the data required by regulation 22A of Annex VI of the Convention, covering ship operations from (dd/mm/yyyy) through (dd/mm/yyyy); and
2. The data was collected and reported in accordance with the methodology and processes set out in the ship's SEEMP that was in effect over the period from (dd/mm/yyyy) through (dd/mm/yyyy).

This Statement of Compliance is valid until (dd/mm/yyyy).....

Issued at
(place of issue of Statement)

Date (dd/mm/yyyy)
(date of issue) *(signature of duly authorized official issuing the Statement)*
(seal or stamp of the authority, as appropriate)

¹ Alternatively, the particulars of the ship may be placed horizontally in boxes.

² In accordance with the *IMO Ship Identification Number Scheme*, adopted by the Organization by resolution A.1078(28).

ANNEX IV

CONFIRMATION OF COMPLIANCE - SEEMP PART II

Issued under the provisions of the Protocol of 1997, as amended, to amend the International Convention for the Prevention of Pollution by Ships, 1973, as modified by the Protocol of 1978 related thereto (hereinafter referred to as "the Convention") under the authority of the Government of:

REPUBLIC OF LIBERIA

(full designation of the country)

By -----

Particulars of ship

Name of ship

Distinctive number or letters

IMO Number

Port of registry

Gross tonnage

SEEMP part II date of revision, as applicable

THIS IS TO CONFIRM:

Taking into account 2016 Guidelines for the Development of a Ship Energy Efficiency Management Plan (SEEMP) adopted by resolution MEPC.282(70), the ship's SEEMP has been developed and complies with regulation 22.2 of Annex VI of the Convention.

Issued at

.....
(place of issue of Statement)

Date (dd/mm/yyyy)

(date of issue)

*(signature of duly authorized official
issuing the Statement)*

(seal or stamp of the authority, as appropriate)