



Office of
Deputy Commissioner
of Maritime Affairs

THE REPUBLIC OF LIBERIA
LIBERIA MARITIME AUTHORITY

Marine Notice

POL-009
Rev. 07/12

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) MEPC Resolution 176(58)
- (d) MEPC Resolution 177(58)- NO_x Technical Code 2008
- (e) MEPC Resolution 181(59)
- (f) MEPC Resolution 182(59)
- (g) MEPC Resolution 184(59)
- (h) MEPC Resolution 190(60)
- (i) MEPC Resolution 194(61)
- (j) MEPC Resolution 202(62)
- (k) MEPC Resolution 203(62)
- (l) MEPC Resolution 212(63)
- (m) MEPC Resolution 213(63)
- (n) MEPC Resolution 214(63)
- (o) MEPC.1/Circ.723
- (p) MEPC.1/Circ.759
- (q) Marine Operations Note 09-2009

Supersedes: Marine Notice POL-009, dated 5/05

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.

MARPOL revised 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(63) and enters into force on 01 January 2013. The Revised Annex VI as amended by Resolutions MEPC 190(60), 194(61), 202(63) and 203(62):

- 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 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 Regulations on Energy Efficiency for ships, 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 (Energy Efficiency) of the revised MARPOL Annex VI applies; and
- Amended the appendix 1 of the revised Annex VI (form of supplement to the International Air Pollution Certificate (IAPP) to precisely document all the amendments.

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 or 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. 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 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 IEEC 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;
9. Under Regulation 19, the Administration may waive the requirements for a ship 400 gross tons and above from complying with Regulations of 20 and 21 for ships constructed prior to 1 January 2017.

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 IEEC and an EEDI Technical File.

Annex VI applies to any type of fuel used on board, including 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 MARPOL revised 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, including 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 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.
- 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 revised NOx Technical Code 2008, 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 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 regulation 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 constructed or adapted and used for the carriage in bulk of any liquefied gas.
- 1.23 **Container ship:** A ship designed exclusively for the carriage of containers in holds and on deck.
- 1.24 **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.
- 1.25 **Refrigerated cargo carrier:** A ship designed exclusively for the carriage of refrigerated cargoes in holds.
- 1.26 **Combination carrier:** A ship designed to load 100% deadweight with both liquid and dry cargo in bulk.
- 1.27 **Passenger ship:** A ship which carries more than 12 passengers.
- 1.28 **Ro-ro cargo ship (vehicle carrier):** A multi deck roll-on-roll-off cargo ship designed for the carriage of empty cars and trucks.
- 1.29 **Ro-ro cargo ship:** A ship designed for the carriage of rool-on-roll-off cargo transportation units.

- 1.30 **Attained Energy Efficiency Design Index (EEDI):** The EEDI value achieved by an individual ship in accordance with Regulation 20 of the revised Annex VI.
- 1.31 **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.

2.0 Approval of equivalents/alternatives; notification to IMO

- 2.1 The Administration will consider proposals to allow 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 If allowed, the Administration will communicate the particulars of the alternative arrangement to the International Maritime Organization in accordance with revised Annex VI.

3.0 Surveys

- 3.1 Every Liberian flag ship of 400 gross tons and above and every fixed and floating drilling rig and other platforms shall be subject to the following periodic surveys by an authorized (Recognized Organization) RO (see section 3.1.8) 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 revised NOx Technical Code 2008. (See section 3.2 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: www.liscr.com.
 - .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.
- 3.2 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 214(63), reference (n) above:
- .1 An initial survey before a new ship (defined in 1.18 above) is put into service and before the IEE Certificate is issued; and whenever 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 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 ship, to ensure that the attained EEDI is recalculated as necessary and meets the requirements of revised Annex VI; and
 - .3 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
- 3.3 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 revised NOx Technical Code 2008; and
 - to ships in accordance with the Guidelines on Survey and Certification of the EEDI, reference (n) above:
- .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 at major conversion.
 - .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 NOx Technical Files and validation of ship's EEDI Technical Files.

4.0 Alterations to equipment

- 4.1 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.

5.0 Reporting accidents or defects

- 5.1 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.

6.0 Agreements with other Administrations

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

7.0 Issuance and form of International Air Pollution Prevention (IAPP) Certificate and International Energy Efficiency (IEE) Certificate.

- 7.1 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.
- 7.2 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.
- 7.3 Authorized ROs and other Parties with which this Administration has an agreement may issue the IAPP Certificate.
- 7.5 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.

7.6 The form of the IAPP and IEE Certificate is specified in Appendix I and new Appendix VIII to revised Annex VI or MARPOL respectively, which is also included in the *Annexes* to this Notice.

8.0 Duration of Certificate, extensions and validity of the IAPP and IEE Certificate.

8.1 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.

8.2 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.

8.3 The IEE Certificate shall be valid throughout the life of the ship, subject to 8.4 below.

8.4 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.

9.0 Port State control on operational requirements (reference (e) above)

9.1 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.

9.2 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.

9.3 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 IEE Certificate on board.

10.0 Emission Control Areas (ECA)

10.1 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.

10.2 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.

10.3 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 enters into effect on 01 August 2012 (references h) and j) above);
- .2 The United States Caribbean Sea ECA (refer to amended Appendix VII of the revised Annex VI for coordinates) which enters 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 MARPOL Annex VI, when operating within the North American and United States Caribbean Sea ECA's.
- .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.

11.0 Control of emissions

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

11.1 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 record book* (Refer to Marine Notice POL-001 for details on obtaining one).
- .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.

11.2 Nitrogen oxides (NOx)

- .1 Regulation 13 of revised Annex VI concerns NOx emissions from marine diesel engines and shall apply to (*Refer to Attachment I*):
 - 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; 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
- .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 revised Annex VI provides for progressive reductions in NOx emissions from marine diesel engines. The new limits represent a reduction of approximately 20% over the previous Annex VI limit (Tier I) and applies to ships constructed on or after 1 January 2011 (Tier II limits). For marine diesel engines installed on ships constructed on or after 1 January 2016 operating in a NOx 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 installed on a ship constructed on or after 1 January 2016, the allowable NO_x emissions while operating in NO_x-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 The more stringent Tier III standards are expected to be met through technologies such as water induction into the combustion process, exhaust gas recirculation, and selective catalytic reduction. However, IMO is required to complete a review by 2013 of technological developments for the purpose of determining if the Tier III standards will be reasonably achievable by the 1 January 2016 effective date, or is postponement is warranted.
- .5 Recreational vessels under 24 meters in length, or vessels with a combined nameplate propulsion power of less than 750 kW with design or construction limitations that would prohibit compliance, may be exempted by the Administration from compliance with the Tier III standards.
- .6 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.
- .7 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.
- .8 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, for a marine diesel engine to which 11.2.6 above applies, indicate that either an approved method has been applied or the engine has been certified as complying with the Tier I, II or III standards above or that an approved method does not yet exist or is not commercially available as described in 11.2.7 above.
- .9 In order to achieve the relevant emission standards in Tier I, II or III, The Administration may permit
 - a) an exhaust gas cleaning system, approved by an authorized RO on behalf of the Administration in accordance with the NO_x Technical Code 2008;
or

- b) other equivalent means, approved by an authorized RO on behalf of the Administration.
- .10 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.
- .11 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.
- .12 The revised NOx Technical Code 2008 shall be applied in the certification, testing and measurement procedures for the standards set forth in 11.2.3 and 11.2.6 above.

11.3 Sulphur oxides (SO_x)

- .1 Regulation 14 of revised Annex VI provides a progressive reduction in SO_x 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 used 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 used on board ships when operating within a designated SO_x ECA, shall not exceed the following limits:
 - a) 1.0% m/m on and after 1 July 2010; and
 - b) 0.10% m/m on and after 1 January 2015 (However, this will be subject to a review on availability of fuel to be completed no later than 2018).
- .5 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 Marine Operations Note 10-2009 for details*).
- .6 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.
- .7 Ships using separate fuel oils 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.

11.4 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 A tanker carrying crude oil 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.

11.5 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).
- .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) 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.

12.0 Fuel oil quality

- 12.1 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.
- 12.2 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)
- 12.3 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.
- 12.4 A signed declaration from the fuel oil supplier(s) representative that the fuel supplied has a sulphur level below the permissible limits and that the fuel 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 is also required.
- 12.5 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), reference (f) above. The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of bunker 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.

12.6 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

12.7 The following action should be taken, if the suppliers bunker delivery note and/or representative FO sample is not in compliance with 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.

13.0 Energy Efficiency for Ships

13.1 MEPC Resolution 203(62) amended the revised Annex VI to include a new chapter 4 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.

13.2 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 and enters into force on 01 January 2013.

13.3 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.

13.4 The EEDI applies only to certain types of ships and does not apply to ships with diesel-electric propulsion, turbine propulsion or hybrid propulsion systems.

13.5 The new chapter 4 represents the first ever mandatory global greenhouse (GHG) gas regime for an international industry sector or transport mode.

13.6 Required EEDI

- .1 The EEDI requires a minimum energy efficiency level per capacity mile (example: tonne mile) for different ship type and size segments. The EEDI provides a specific figure for an individual ship design, expressed in grams of carbon dioxide (CO₂) per

ship's capacity-mile and is calculated by a formula based on the technical design parameters.

- .2 From 1 January 2013, following an initial two (2) year phase zero when new ship design will need to meet the reference level for their ship type, the CO2 reduction level (grams of CO2 per tonne mile) is set to 10% for the first phase (1 January 2015), 20% for the second phase (1 January 2020) and 30% for the third phase (1 January 2025), calculated from a reference line representing the average efficiency for ships built between 2000 and 2010.
- .3 The Required EEDI shall be calculated for each:
 - a) New ship;
 - b) New ship which has undergone a major conversion; and
 - c) New or existing ship which has undergone a major conversion that is so extensive that the Administration considers it to be a newly constructed ship which falls into one of the categories defined in 1.20 to 1.26 of this marine Notice and to which chapter 4 of revised Annex VI applies.

- .4 The Required EEDI shall be calculated using the formula:

Required EEDI = $(1 - X/100)$. Reference line value,

Where X is the reduction factor specified in *Attachment 3* for the required EEDI compared to the EEDI reference line.

- .5 The Reference line values shall be calculated as follows:

Reference line value = $a \cdot b^{-c}$

Where a, b and c are the parameters given in *Attachment 3*

13.7 Attained EEDI

- .1 The attained EEDI shall be calculated for:
 - a) Each new ship;
 - b) Each new ship which has undergone a major conversion; and
 - c) Each new or existing ship which has undergone a major conversion, that is so extensive that the Administration considers it to be a newly constructed ship which falls into one or more of the categories defined in 1.20 to 1.26 of this Marine Notice.
- .2 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.
- .3 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.

- .4 The Attained EEDI shall be as follows:
Attained EEDI \leq Required EEDI
and shall be calculated taking into account guidelines in MEPC Resolution 212(63), reference (l) above.
- .5 For each new and existing ship that has undergone a major conversion which is so extensive that the Administration considers it to be a newly constructed ship, the attained EEDI shall be calculated 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.
- .6 If the design of a ship allows it to fall into more than the ship types defined in 1.20 to 1.26 of this Marine Notice, the required EEDI for the ship shall be the most stringent (the lowest) required EEDI.

13.8 Ship Energy Efficiency Management Plan (SEEMP)

- .1 Each ship shall keep on board a ship specific SEEMP, which may form part of the Ship's Safety Management System (SMS). Refer to Marine Notice POL-001 for details.
- .2 The SEEMP shall be developed taking into account guidelines in MEPC Resolution 213(63), reference (m) above.

14.0 **Implementation management**

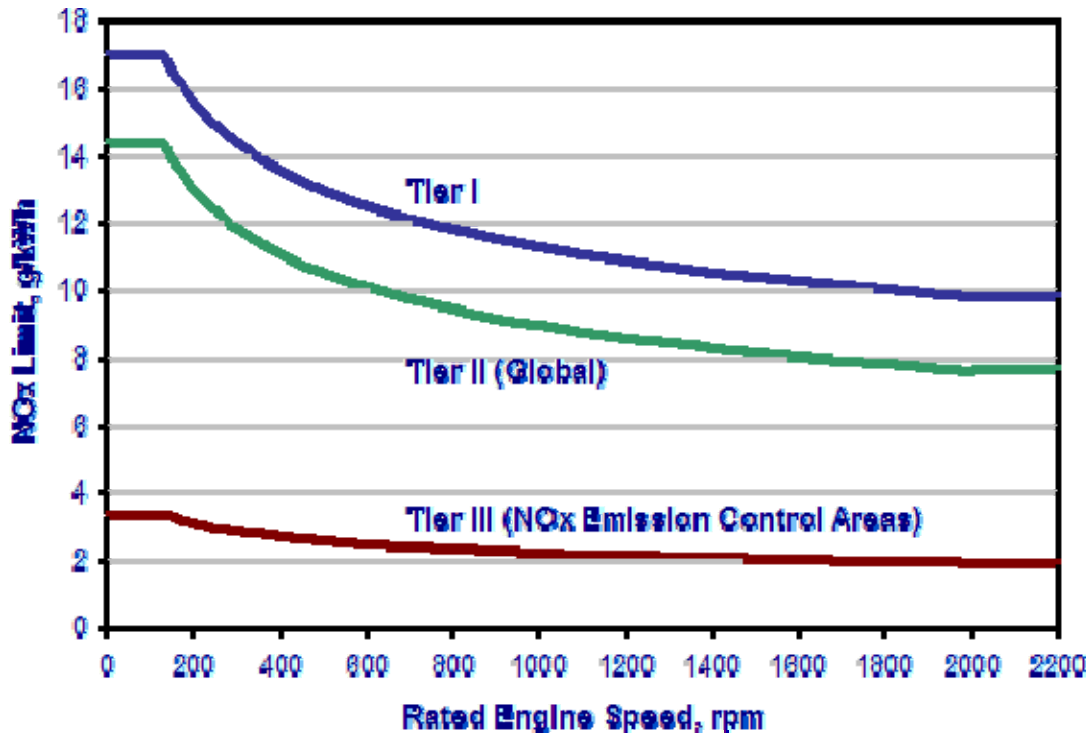
- 14.1 Owners/Operators should include appropriate elements of MARPOL Annex VI into their Company's Safety Management System (SMS). Such elements should include requirements regarding:
- .1 Nitrogen Oxides (NO_x);
 - .2 Sulphur Oxides (SO_x);
 - .3 Emission Control Areas (ECAs);
 - .4 Ozone Depleting 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.

ATTACHMENT 1

MARPOL Revised Annex VI - NOx Emission Limits

Tier	Date	NOx 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 NOx Emission Control Areas (Tier II standards apply outside ECAs).

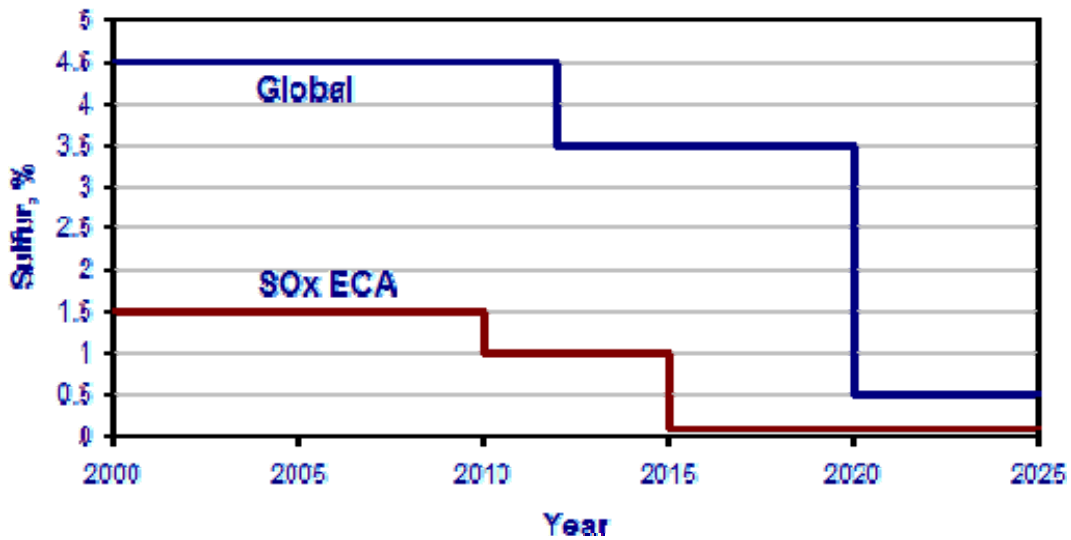


ATTACHMENT 2

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 ^a		0.5%

a - alternative date is 2025, to be decided by a review in 2018



ATTACHMENT 3

Reduction factors (in percentage) for the EEDI relative to the EEDI Reference line

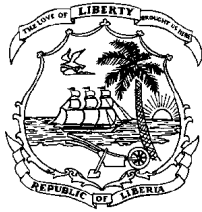
Ship Type	Size	Phase 0 1 Jan 2013 - 31 Dec 2014	Phase 1 1 Jan 2015 – 31 Dec 2019	Phase 2 1 Jan 2020 – 31 Dec 2024	Phase 3 1 Jan 2025 and onwards
Bulk carrier	20,000 DWT and above	0	10	20	30
	10,000 - 20,000 DWT	n/a	0-10*	0-20*	0-30*
Gas carrier	10,000 DWT and above	0	10	20	30
	2,000 – 10,000 DWT	n/a	0-10*	0-20*	0-30*
Tanker	20,000 DWT and above	0	10	20	30
	4,000 – 20,000 DWT	n/a	0-10*	0-20*	0-30*
Container ship	15,000 DWT and above	0	10	20	30
	10,000 – 15,000 DWT	n/a	0-10*	0-20*	0-30*
General Cargo ships	15,000 DWT and above	0	10	15	30
	3,000 – 15,000 DWT	n/a	0-10*	0-15*	0-30*
Refrigerated cargo carrier	5,000 DWT and above	0	10	15	30
	3,000 – 5,000 DWT	n/a	0-10*	0-15*	0-30*
Combination carrier	20,000 DWT and above	0	10	15	30
	4,000 – 20,000 DWT	n/a	0-10*	0-15*	0-30

Parameters for determination of reference values for the different ship types

Ship type defined in regulation 2	a	b	c
2.25 Bulk carrier	961.79	DWT of the ship	0.477
2.26 Gas carrier	1120.00	DWT of the ship	0.456
2.27 Tanker	1218.80	DWT of the ship	0.488
2.28 Container ship	174.22	DWT of the ship	0.201
2.29 General cargo ship	107.48	DWT of the ship	0.216
2.30 Refrigerated cargo carrier	227.01	DWT of the ship	0.244
2.31 Combination carrier	1219.00	DWT of the ship	0.488

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:

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:

- That the ship has been surveyed in accordance with regulation 5 of Annex VI of the Convention; and
- 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.

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

2.2 Nitrogen oxides (NO_x) (regulation 13)

2.2.1 The following marine diesel engines installed on this ship comply with the applicable emission limit of regulation 13 in accordance with the revised NO_x Technical Code 2008:.....

	Engine # 1	Engine # 2	Engine # 3	Engine # 4	Engine # 5	Engine # 6
Manufacturer and model						
Serial number						
Use						
Power output (kW)						
Rated speed						
Date of installation (dd/mm/yyyy)						
Date of major conversion (dd/mm/yyyy)	According To Reg. 13.2.2					
	According To Reg. 13.2.3					
Exempted by regulation 13.1.1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tier I Reg. 13.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tier II Reg. 13.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tier II Reg. 13.2.2 or 13.5.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tier III Reg. 13.5.1.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approved method exists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approved method not commercially available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Approved method installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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 resolution MEPC.76(40)*..
- .2 installed before 1 January 2000 which complies with:
 - .2.1 resolution MEPC.59(33)**
 - .2.2 resolution MEPC.76(40)*

2.6 Equivalentents (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)

*As amended by MEPC.93(45).

**As amended by MEPC.92(45).

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:

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)

**Supplement to the International Energy Efficiency Certificate
(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

*
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 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

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)

(Seal or stamp of the authority, as appropriate)"

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