

# **S.I. No. 313/2010 — Sea Pollution (Prevention of Air Pollution from Ships) Regulations 2010.**

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2010 313

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S.I. No. 313 of 2010

### SEA POLLUTION (PREVENTION OF AIR POLLUTION FROM SHIPS) REGULATIONS 2010

*Notice of the making of this Statutory Instrument was published in*

*“Iris Oifigiúil” of 2nd July, 2010.*

I, NOEL DEMPSEY, Minister for Transport, in exercise of the powers conferred on me by sections 10, 11, 12, 14 (each as amended by the Sea Pollution (Miscellaneous Provisions) Act 2006 (No. 29 of 2006)), 15 and 17 of the Sea Pollution Act 1991 (No. 27 of 1991) and the Maritime, Transport, Safety and Security (Transfer of Departmental Administration and Ministerial Functions) Order 2005 ( S.I. No. 842 of 2005 ) and for the purpose of giving effect to Annex VI to the MARPOL Convention, hereby make the following regulations:

#### PART 1 GENERAL

##### *Citation.*

1. (1) These Regulations may be cited as the Sea Pollution (Prevention of Air Pollution from Ships) Regulations 2010.

(2) These Regulations come into operation on 1 July 2010.

##### *Interpretation.*

2. (1) In these Regulations—

“Act” means the Sea Pollution Act 1991 (No. 27 of 1991);

“Annex VI” means revised Annex VI to the MARPOL Convention (and for ease of reference the text of Annex VI is set out in the Schedule to these Regulations);

“emission” means any release of substances, subject to control by Annex VI, from ships into the atmosphere or sea;

“IAPP Certificate” means an International Air Pollution Certificate;

“inspector” means an officer appointed by the Minister under Regulation 5(1) of the European Communities Merchant Shipping (Port State Control) Regulations 1998 ( S.I. No. 145 of 1998 );

“MARPOL Convention” means the International Convention for the Prevention of Pollution from Ships, 1973, done at London on 2 November 1973, as amended by the Protocols of 1978 and 1997;

“Organization” means the International Maritime Organization;

“Party” means a state (other than the State) that has ratified the MARPOL Convention;

“qualified person” means a surveyor of ships or a recognised organisation;

“recognised organisation” means an organisation authorised by the Minister under the European Communities (Ship Inspection and Survey Organisations) Regulations 2003 ( S.I. No. 301 of 2003 ) to carry out surveys or inspections;

“surveyor” means a surveyor of ships or an inspector appointed under section 20 of the Act for the purposes of section 17.

(2) Where standards and guidelines developed by the Organization and referred to in these Regulations are amended after these Regulations come into operation, the reference shall be taken to be a reference to the standards and guidelines as amended.

(3) If a word or expression that is not defined in these Regulations is used in these Regulations and is also used in Annex VI, the word or expression has, unless the context otherwise requires, the same meaning in these Regulations as in that Annex.

(4) A reference in a form set out in the Schedule to a regulation is to a regulation of Annex VI.

#### *Application.*

3. Unless expressly provided otherwise, these Regulations apply to all ships—

(a) in the State (within the meaning of section 3(2A) (inserted by section 93(4) of the Sea-Fisheries and Maritime Jurisdiction Act 2006 (No. 8 of 2006)) of the Sea Pollution Act 1991 (No. 27 of 1991)), or

(b) registered in the State.

#### *Emission of substances subject to control by Annex VI.*

4. The emission of substances subject to control by Annex VI from ships into the atmosphere or sea is prohibited otherwise than as provided for in these Regulations.

#### *Equivalents.*

5. A fitting, material, appliance or apparatus may be fitted in a ship, or other procedures,

alternative fuel oils or compliance methods may be used as an alternative to that required by these Regulations if a qualified person is satisfied that the alternative is at least as effective in reducing emissions as that required by these Regulations including any standards set out in Regulations 12 and 13.

## PART 2 SURVEYS, CERTIFICATION AND MEANS OF CONTROL

### *Survey and certification.*

6. (1) Every ship of 400 gross tonnage and above and every fixed and floating drilling rig and other platforms shall be surveyed and certified in accordance with Annex VI.

(2) In particular, the surveys shall be done in the manner, and at the times, required by Regulation 5 of Annex VI.

(3) (a) A survey of ships as regards the enforcement of these Regulations shall be carried out by a qualified person.

(b) A survey of marine diesel engines and equipment for compliance with Regulation 12 shall be conducted in accordance with the revised NOx Technical Code 2008.

(4) (a) The equipment of a ship shall be maintained to conform with the provisions of these Regulations.

(b) After any survey has been carried out in accordance with Annex VI no change shall be made in the equipment, systems, fittings arrangements or materials covered by the relevant survey without the express approval of the Minister except the direct replacement of such equipment and fittings with fittings and equipment that conform with the provisions of Annex VI.

(5) (a) Where a qualified person determines that the condition of the equipment does not correspond substantially with the particulars of the IAPP Certificate, he or she shall require corrective action to be taken and in due course notify the Minister.

(b) If the required corrective action is not taken, the Minister shall withdraw the IAPP Certificate.

(c) If the ship is in the port of a Party, the appropriate authorities of that Party shall also be notified.

(6) Whenever an accident occurs to a ship, or a defect is discovered that substantially affects the integrity of the ship or the efficiency or completeness of its equipment covered by these Regulations, the master or owner of the ship shall report at the earliest opportunity to the Minister or to the qualified person responsible for issuing the relevant Certificate.

### *Issue and endorsement of IAPP Certificate.*

7. (1) An IAPP Certificate shall be issued after an initial survey under Regulation 5.1.1 of Annex VI or a renewal survey under Regulation 5.1.2 of that Annex to:

(a) any ship of 400 gross tonnage and above engaged in voyages to ports or offshore

terminals under the jurisdiction of other Parties;

(b) platforms and drilling rigs engaged in voyages to waters under the sovereignty or jurisdiction of other Parties.

(2) Where—

(a) a ship entitled to fly the flag of the State, or

(b) a ship that, although not entitled to fly the flag of the State, operates under the authority of the State,

has been constructed before 19 May 2005, it shall be issued with an IAPP Certificate in accordance with paragraph (1) no later than the first scheduled dry-docking after 19 May 2005 but in no case no later than 3 years after that date.

(3) An IAPP Certificate shall be issued or endorsed, as appropriate, by a qualified person.

(4) An IAPP Certificate shall not be issued to a ship which is entitled to fly the flag of a State which is not a Party.

*Form of IAPP Certificate.*

8. The IAPP Certificate shall be in the form set out in Appendix I of Annex VI.

*Duration and validity of IAPP Certificate.*

9. (1) An IAPP Certificate shall be issued for a period specified by a qualified person that shall not exceed 5 years.

(2) Notwithstanding paragraph (1)—

(a) when the renewal survey is completed within 3 months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate,

(b) when the renewal survey is completed after the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of expiry of the existing Certificate,

(c) when the renewal survey is completed more than 3 months before the expiry date of the existing Certificate, the new Certificate shall be valid from the date of completion of the renewal survey to a date not exceeding 5 years from the date of completion of the renewal survey.

(3) If an IAPP Certificate is issued for a period of less than 5 years, a qualified person may extend the validity of the Certificate beyond the expiry date to the maximum period specified in paragraph (1), provided that an intermediate survey under Regulation 5.1.3 of Annex VI and an annual survey under Regulation 5.1.4 of Annex VI are carried out as appropriate.

(4) If a renewal survey has been completed and a new Certificate cannot be issued or placed

on board the ship before the expiry date of the existing Certificate, a qualified person may endorse the existing Certificate and the Certificate shall be valid for a further period not exceeding 5 months from the expiry date.

(5) If a ship at the time when an IAPP Certificate expires is not in a port in which it is to be surveyed, the Minister may extend the period of validity of the Certificate. Such an extension shall be granted, where it appears proper and reasonable to do so, only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed. A Certificate shall not be extended for a period longer than 3 months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new Certificate. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding 5 years from the date of expiry of the existing Certificate before the extension was granted.

(6) An IAPP Certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this Regulation may be extended by the Minister for a period of grace of up to one month from the date of expiry stated in it. When the renewal survey is completed, the new Certificate shall be valid to a date not exceeding 5 years from the expiry date of the existing Certificate before the extension was granted.

(7) In such special circumstances as the Minister may determine, a new IAPP Certificate need not be dated from the date of expiry of the existing Certificate as required by paragraph (2)(a), (5) or (6). In such a case, the new Certificate shall be valid to a date not exceeding 5 years from the date of completion of the renewal survey.

(8) Where—

(a) an annual survey is completed before the period specified in Regulation 5.1.4 of Annex VI, or

(b) an intermediate survey is completed before the period specified in Regulation 5.1.3 of Annex VI,

then—

(i) the anniversary date shown on the certificate shall be amended by endorsement to a date which shall not be more than 3 months later than the date on which the relevant survey was completed,

(ii) the subsequent annual or intermediate survey shall be completed at the intervals required by Regulation 5.1.4 of Annex VI in the case of an annual survey and Regulation 5.1.3 of that Annex in the case of an intermediate survey using the new anniversary date,

(iii) the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys allowed by Regulation 5 of Annex VI are not exceeded.

(9) An IAPP certificate shall cease to be valid—

(a) if the relevant survey under Regulation 5 of Annex VI is not completed within the

period specified in that Regulation,

(b) if the certificate is not endorsed in accordance with Regulation 5.1.3 or 5.1.4 of Annex VI, or

(c) if the ship transfers to the flag of another state.

*Detection of violations and enforcement.*

10. (1) A ship to which these Regulations apply may, in any port or offshore terminal of the State, be inspected for the purpose of verifying whether the ship has emitted any of the substances covered by these Regulations in contravention of the provisions of these Regulations.

(2) (a) If an inspector, having inspected a ship, has reason to believe that the ship is in contravention of these Regulations, the inspector shall so inform the master of the ship.

(b) The inspector shall also report to the Minister setting out the evidence of the contravention.

PART 3 REQUIREMENTS FOR CONTROL OF EMISSIONS FROM SHIPS

*Ozone-depleting substances.*

11. (1) This Regulation does not apply to permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone-depleting substances.

(2) Subject to section 11 of the Act, any deliberate emission of ozone-depleting substances is prohibited. Deliberate emissions include emissions occurring in the course of maintaining, servicing, repairing or disposing of systems or equipment but do not include any minimal release associated with the recapture or recycling of an ozone-depleting substance.

(3) Installations which contain ozone-depleting substances (other than hydro-chlorofluorocarbons) are prohibited—

(a) on ships constructed on or after 19 May 2005,

(b) on ships constructed before 19 May 2005—

(i) where there is a contractual delivery date of the equipment to the ship on or after 19 May 2005, or

(ii) in the absence of a contractual delivery date, where the actual delivery of the equipment to the ship occurs on or after 19 May 2005.

(4) Installations which contain hydro-chlorofluorocarbons are prohibited—

(a) on ships constructed on or after 1 January 2020,

(b) on ships constructed before 1 January 2020—

(i) where there is a contractual delivery date of the equipment to the ship on or after 1 January 2020, or

(ii) in the absence of a contractual delivery date, where the actual delivery of the equipment to the ship occurs on or after 1 January 2020.

(5) The substances referred to in this Regulation, and equipment containing such substances, shall be delivered to appropriate reception facilities when removed from ships.

(6) A ship subject to Regulation 7(1) shall maintain a list of equipment containing ozone-depleting substances.

(7) A ship subject to Regulation 7(1) which has rechargeable systems that contain ozone-depleting substances shall maintain, in accordance with paragraph (8), an ozone-depleting substances record book which may form part of an existing log book or electronic recording system approved by the Minister.

(8) 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) deliberate and non-deliberate discharge of ozone-depleting substances to the atmosphere,
- (d) discharge of ozone-depleting substances to land-based reception facilities, and
- (e) supply of ozone-depleting substances to the ship.

*Nitrogen Oxides (NO<sub>x</sub>).*

12. (1) This Regulation applies to—

(a) a marine diesel engine with a power output of more than 130 kW installed on a ship, and

(b) a 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—

(i) it is demonstrated to the satisfaction of the Minister that the replacement engine is identical to the engine which it is replacing, and

(ii) it is not otherwise covered under subparagraph (a).

(2) This Regulation does not apply to—

(a) a marine diesel engine which is intended to be used solely for emergencies, or solely to power any device or equipment intended to be used solely for emergencies on the ship on which it is installed, or a marine diesel engine installed in lifeboats intended



to be used solely for emergencies, and

(b) a marine diesel engine installed in an Irish registered ship which is solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State only if the engine is subject to an alternative NO<sub>x</sub> control measure established by the Minister.

(3) Notwithstanding paragraph (1), the Minister may exclude from the application of this Regulation any marine diesel engine which is installed on a ship constructed before 19 May 2005, or for any marine diesel engine which undergoes a major conversion before that date, provided that the ship on which the engine is installed is an Irish registered ship which is solely engaged in voyages to ports or offshore terminals within the State.

(4) (a) For the purpose of this Regulation, “major conversion” 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 paragraphs (5), (6), or (7)(a)(i) where—

(i) the engine is replaced by a marine diesel engine or an additional marine diesel engine is installed, or

(ii) any substantial modification, as defined in the revised NO<sub>x</sub> Technical Code 2008, is made to the engine, or

(iii) 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.

(b) For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this Regulation in force at the time of the replacement or addition of the engine shall apply. On or after 1 January 2016, in the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in paragraph (7)(a)(i) (Tier III in Annex VI), then that replacement engine shall meet the standards set forth in paragraph (6) (Tier II in Annex VI) taking into account relevant guidelines to be developed by the Organization to set forth the criteria of when it is not possible for a replacement engine to meet the standards in paragraph (7)(a)(i).

(c) A marine diesel engine referred to in paragraph (4)(a)(ii) or (4)(a)(iii) shall meet the following standards:

(i) for ships constructed prior to 1 January 2000, the standards set forth in paragraph (5) shall apply; and

(ii) for ships constructed on or after 1 January 2000, the standards in force at the time the ship was constructed shall apply.

(5) Subject to the provisions of section 11 of the Act, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2000 and prior to 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits (Tier I in Annex VI), where n = rated engine speed (crankshaft revolutions per minute):

- (a) 17.0 g/kWh when  $n$  is less than 130 rpm;
- (b)  $45 \cdot n^{-0.2}$  g/kWh when  $n$  is 130 or more but less than 2,000 rpm;
- (c) 9.8 g/kWh when  $n$  is 2,000 rpm or more.

(6) Subject to the provisions of section 11 of the Act, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits (Tier II in Annex VI), where  $n$  = rated engine speed (crankshaft revolutions per minute):

- (a) 14.4 g/kWh when  $n$  is less than 130 rpm;
- (b)  $44 \cdot n^{-0.23}$  g/kWh when  $n$  is 130 or more but less than 2,000 rpm;
- (c) 7.7 g/kWh when  $n$  is 2,000 rpm or more.

(7) (a) Subject to the provisions of section 11 of the Act, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2016:

(i) is prohibited except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits (Tier III in Annex VI), where  $n$  = rated engine speed (crankshaft revolutions per minute):

- (I) 3.4 g/kWh when  $n$  is less than 130 rpm;
- (II)  $9 \cdot n^{-0.2}$  g/kWh when  $n$  is 130 or more but less than 2,000 rpm; and
- (III) 2.0 g/kWh when  $n$  is 2,000 rpm or more;

(ii) is subject to the standards set out in subparagraph (a)(i) when the ship is operating in an Emission Control Area designated under paragraph (8); and

(iii) is subject to the standards set out in paragraph (6) when the ship is operating outside of an Emission Control Area designated under paragraph (8).

(b) Subject to the review set forth in regulation 13.10 of Annex VI, the standards set out in subparagraph (a)(i) shall not apply to:

(i) a marine diesel engine installed on a ship with a length ( $L$ ), as defined in regulation 1.19 of Annex I to the MARPOL Convention, less than 24 metres when it has been specifically designed, and is used solely, for recreational purposes; or

(ii) a marine diesel engine installed on a ship with a combined nameplate diesel engine propulsion power of less than 750 kW if it is demonstrated, to the satisfaction of the Minister, that the ship cannot comply with the standards set forth in subparagraph (a)(i) because of design or construction limitations of the ship.

(8) For the purpose of this Regulation, an Emission Control Area includes any sea area, including any port area, designated by the Organization in accordance with the criteria and procedures set forth in Appendix III of Annex VI.

(9) (a) Notwithstanding subparagraph (1)(a), a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 shall comply with the emission limits set forth in subparagraph (d), provided that an Approved Method for that engine has been certified or accepted by the Minister and such certification has been notified to the Organization. Compliance with this paragraph shall be demonstrated through one of the following:

(i) installation of the certified Approved Method, 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; or

(ii) certification of the engine confirming that it operates within the limits set forth in paragraphs (5), (6), or (7)(a)(i) and an appropriate notation of the engine certification on the ship's IAPPCertificate.

(b) Subparagraph (a) shall apply no later than the first renewal survey that occurs 12 months or more after deposit of the notification referred to in subparagraph (a). If an owner of a ship on which an Approved Method is to be installed can demonstrate to the satisfaction of the Minister that the Approved Method was not commercially available despite best efforts to obtain it, then that Approved Method shall be installed on the ship no later than the next annual survey of that ship which falls after the Approved Method is commercially available.

(c) With regard to a ship with a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, the IAPP Certificate shall, for a marine diesel engine to which subparagraph (a) applies, indicate that either an Approved Method has been applied pursuant to subparagraph (a)(i), or the engine has been certified pursuant to subparagraph (a)(ii), or that an Approved Method does not yet exist or is not yet commercially available as described in subparagraph (b).

(d) Subject to the provisions of section 11 of the Act, the operation of a marine diesel engine described in subparagraph (a) is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

(i) 17.0 g/kWh when n is less than 130 rpm;

(ii)  $45 \cdot n^{-0.2}$  g/kWh when n is 130 or more but less than 2,000 rpm; and

(iii) 9.8 g/kWh when n is 2,000 rpm or more.

(e) Certification of an Approved Method shall be in accordance with chapter 7 of the revised NOx Technical Code 2008 and shall include verification:

(i) by the designer of the base marine diesel engine to which the Approved Method applies that the calculated effect of the Approved Method will not decrease engine rating by more than 1.0%, increase fuel consumption by more than 2.0% as measured

according to the appropriate test cycle set forth in the revised NOx Technical Code 2008, or adversely affect engine durability or reliability; and

(ii) that the cost of the Approved Method is not excessive, which is determined by a comparison of the amount of NOx reduced by the Approved Method to achieve the standard set forth in subparagraph (d) and the cost of purchasing and installing such Approved Method.

(10) The revised NOx Technical Code 2008 shall be applied in the certification, testing, and measurement procedures for the standards set forth in this Regulation. The test cycles and weighting factors for verification of compliance of marine diesel engines with the applicable NOx limit in accordance with this Regulation, for use under the test procedure and calculation method as specified in the revised NOx Technical Code 2008, are provided in Appendix II of Annex VI.

(11) The procedures for determining NOx emissions set out in the revised NOx Technical Code 2008 are intended to be representative of the normal operation of the engine. Defeat devices and irrational emission control strategies undermine this intention and shall not be allowed. This Regulation shall not prevent the use of auxiliary control devices that are used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure or that are used to facilitate the starting of the engine.

*Sulphur Oxides (SO<sub>x</sub>) and Particulate Matter.*

13. (1) The sulphur content of any fuel oil used on board ships shall not exceed the following limits:

- (a) 4.50% m/m prior to 1 January 2012;
- (b) 3.50% m/m on and after 1 January 2012; and
- (c) 0.50% m/m on and after 1 January 2020.

(2) For the purpose of this Regulation the following are designated as Emission Control Areas:

(a) the Baltic Sea area as defined in Regulation 1.11.2 of Annex I of the MARPOL Convention, and the North Sea as defined in Regulation 5(1)(f) of Annex V of the MARPOL Convention, and

(b) any other sea area, including port areas, designated by the Organization in accordance with criteria and procedures set forth in Appendix III of Annex VI.

(3) While ships are operating within an Emission Control Area the sulphur content of fuel oil used on board ships shall not exceed the following limits:

- (a) 1.50% m/m prior to 1 July 2010;
- (b) 1.00% m/m on and after 1 July 2010; and
- (c) 0.10% m/m on and after 1 January 2015.

(4) The sulphur content of fuel oil referred to in paragraphs (1) and (3), shall be documented by its supplier as required by Regulation 17.

(5) Those ships using separate fuel oils in compliance with paragraph (3) and entering or leaving an Emission Control Area specified in paragraph (2) shall 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 specified in paragraph (3) prior to entry into an Emission Control Area. 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 Emission Control Area or commenced after exit from such an area, shall be recorded in such log-book as prescribed by the Minister.

(6) During the first twelve months immediately following an amendment designating a specific Emission Control Area under paragraph (2)(b), ships operating in that Emission Control Area are exempt from the requirements in paragraphs (3) and (5) and from the requirements of paragraph (4) insofar as they relate to paragraph (3).

*Volatile Organic Compounds (VOCs).*

14. (1) Emissions of VOCs from a tanker in a port or ports or a terminal or terminals of the State shall be regulated in accordance with the provisions of this Regulation.

(2) Where tankers are regulated for VOC emissions in accordance with this Regulation the Minister shall cause a notification to be submitted to the Organization containing information on the size of tankers to be controlled, the cargoes requiring vapour emission control systems, and the effective date of such control, at least six months before the effective date.

(3) Any port or terminal at which VOC emissions from tankers are to be regulated shall provide approved vapour emission control systems which are operated safely, taking into account the safety standards for such systems developed by the Organization (by reference to MSC/Circ.585, Standards for vapour emission control systems), and in a manner so as to avoid undue delay to a ship.

(4) A tanker to which paragraph (1) applies shall be provided with a vapour emission collection system approved by the Minister taking into account the safety standards for such systems developed by the Organization, (by reference to MSC/Circ.585, Standards for vapour emission control systems), and shall use this system during the loading of relevant cargoes. A port or terminal which has installed vapour emission control systems in accordance with this Regulation may accept tankers which are not fitted with vapour collection systems for a period of three years after the effective date identified in paragraph (2).

(5) A tanker carrying crude oil shall have on board and implement a VOC Management Plan approved by the Minister. Such a plan shall be prepared taking into account the guidelines developed by the Organization. The plan shall be specific to each ship and shall at least:

(a) provide written procedures for minimizing VOC emissions during the loading, sea

passage and discharge of cargo;

(b) give consideration to the additional VOCs generated by crude oil washing;

(c) identify a person responsible for implementing the plan; and

(d) for ships on international voyages, be written, at least, in the English language.

(6) This Regulation shall also apply to gas carriers only if the type of loading and containment systems allow safe retention of non-methane VOCs on board or their safe return ashore.

#### *Shipboard Incineration.*

15. (1) Except as provided in paragraph (4), shipboard incineration shall be allowed only in a shipboard incinerator.

(2) Shipboard incineration of the following substances is prohibited:

(a) residues of cargoes subject to Annex I, II or III of the MARPOL Convention or related contaminated packing materials;

(b) polychlorinated biphenyls (PCBs);

(c) garbage, as defined by Annex V of the MARPOL Convention, containing more than traces of heavy metals;

(d) refined petroleum products containing halogen compounds;

(e) sewage sludge and sludge oil either of which are not generated on board the ship;

(f) exhaust gas cleaning system residues.

(3) Shipboard incineration of polyvinyl chlorides (PVCs) is prohibited, except in a shipboard incinerator for which an IMO Type Approval Certificate has been issued.

(4) Shipboard incineration of sewage sludge and sludge oil generated during normal operation of a ship may also take place in the main or auxiliary power plant or boilers, but in those cases, shall not take place inside ports, harbours and estuaries.

(5) Nothing in this Regulation—

(a) affects the prohibition in, or other requirements of, the Dumping at Sea Acts 1996 to 2006, or

(b) precludes the development, installation and operation of alternative design shipboard thermal waste treatment devices that meet or exceed the requirements of this Regulation.

(6) (a) Except as provided in subparagraph (b), an incinerator on a ship constructed on or after 1 January 2000 or an incinerator which is installed on board a ship on or after 1 January 2000 shall meet the requirements contained in Appendix IV of Annex VI. An

incinerator subject to this subparagraph shall be approved by the Minister taking into account the standard specification for shipboard incinerators developed by the Organization (by reference to resolution MEPC.76(40) on Standard specification for shipboard incinerators); or

(b) the Minister may allow exclusion from the application of subparagraph (a) to any incinerator which is installed on board a ship before 19 May 2005; but only if the ship is solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State.

(7) Incinerators installed in accordance with the requirements of paragraph (6)(a) shall be provided with a manufacturer's operating manual which is to be retained with the unit and which shall specify how to operate the incinerator within the limits described in paragraph 2 of Appendix IV of Annex VI.

(8) Personnel responsible for the operation of an incinerator installed in accordance with the requirements of paragraph (6)(a) shall be trained to implement the guidance provided in the manufacturer's operating manual as required by paragraph (7).

(9) For incinerators installed in accordance with the requirements of paragraph (6)(a) the combustion chamber gas outlet temperature shall be monitored at all times the unit is in operation. Where that incinerator is of the continuous-feed type, waste shall not be fed into the unit when the combustion chamber gas outlet temperature is below 850°C. Where that incinerator is of the batch-loaded type, the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up and will thereafter stabilize at a temperature not less than 850°C.

#### *Reception facilities.*

16. (1) A harbour authority or person having control of a harbour shall provide—

(a) facilities at repair ports for the reception, without causing undue delay to ships, of ozone-depleting substances and equipment containing such substances when removed from ships,

(b) facilities at ports, terminals or repair ports for the reception, without causing undue delay to ships, of exhaust gas cleaning residues from an exhaust gas cleaning system, and

(c) facilities at ship-breaking facilities for the reception of ozone-depleting substances and equipment containing such substances when removed from ships.

(2) (a) Where a particular port or terminal is, taking into account the guidelines to be developed by the Organization, remotely located from, or lacking in, the industrial infrastructure necessary to manage and process those substances referred to in paragraph (1) and therefore cannot accept such substances, the harbour authority or person having control of that harbour shall inform the Minister so that he or she can cause this information to be submitted to the Organization so that it may be circulated to all Parties and Member States of the Organization for their information and any appropriate action.

(b) Where a particular port or terminal has reception facilities available to manage and

process those substances referred to in paragraph (1), the harbour authority or person having control of that harbour shall inform the Minister so that he or she can cause this information to be submitted to the Organization so that it may be circulated to all Parties and Member States of the Organization for their information and any appropriate action.

(3) The owner or master of a ship shall notify the Minister for transmission to the Member States of the Organization of all cases where the facilities provided under this Regulation are unavailable or alleged to be inadequate.

*Fuel oil availability and quality.*

17. (1) The Minister shall cause all reasonable steps to be taken to promote the availability of fuel oils which comply with Annex VI and inform the Organization of the availability of compliant fuel oils in ports and terminals.

(2) (a) If a ship is found by an inspector not to be in compliance with the standards for compliant fuel oils set out in these Regulations, the Minister may require the ship to—

(i) present a record of the actions taken to attempt to achieve compliance;

(ii) 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.

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

(c) If a ship provides the information required under paragraph (2)(a), the Minister shall take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures.

(d) A ship shall notify the Minister and the harbour authority or person having control of the relevant port of destination when it cannot purchase compliant fuel oil.

(e) The Minister shall cause a notification to be submitted to the Organization when a ship has presented evidence of the non-availability of compliant fuel oil.

(3) Fuel oil for combustion purposes delivered to and used on board ships to which these Regulations apply shall meet the following requirements—

(a) except as provided in subparagraph (b)—

(i) the fuel oil shall be blends of hydrocarbons derived from petroleum refining, but this shall not preclude the incorporation of small amounts of additives intended to improve some aspects of performance;

(ii) the fuel oil shall be free from inorganic acid;

(iii) the fuel oil shall not include any added substance or chemical waste which—



(I) jeopardises the safety of ships or adversely affects the performance of the machinery, or

(II) is harmful to personnel, or

(III) contributes overall to additional air pollution;

(b) fuel oil for combustion purposes derived by methods other than petroleum refining shall not—

(i) exceed the applicable sulphur content set forth in Regulation 13,

(ii) cause an engine to exceed the applicable NO<sub>x</sub> emission limits set forth in paragraphs (5), (6), (7)(a)(i) and (9)(d) of Regulation 12,

(iii) contain inorganic acid, or

(iv) jeopardise the safety of ships or adversely affect the performance of the machinery, or

(v) be harmful to personnel, or

(vi) contribute overall to additional air pollution.

(4) (a) This Regulation does not apply to coal in its solid form or nuclear fuels.

(b) Paragraphs (5), (6), (7)(a), (7)(b), (8)(a), (8)(b), (9)(b), (9)(c), and (9)(d) do not apply to gas fuels such as Liquefied Natural Gas, Compressed Natural Gas or Liquefied Petroleum Gas.

(c) The sulphur content of gas fuels delivered to a ship specifically for combustion purposes on board that ship shall be documented by the supplier.

(5) For each ship subject to Regulations 6 and 7, details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note which shall contain at least the information specified in Appendix V of Annex VI.

(6) The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board.

(7) (a) An inspector may—

(i) inspect the bunker delivery notes on board any ship to which these Regulations apply while the ship is in a port or offshore terminal of the State,

(ii) make a copy of each delivery note,

(iii) require the master or person in charge of the ship to certify that each copy is a true copy of such bunker delivery note, and

(iv) verify the contents of each note through consultations with the port where the

note was issued.

(b) The inspection of the bunker delivery notes and the taking of certified copies by an inspector under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

(8) (a) The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines developed by the Organization, (refer to MEPC. (96) 47, Guidelines for the sampling of Fuel Oil for Determination of Compliance with Annex VI of Marpol 73/78). The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of the bunker operation on completion of bunkering operations and retained under the 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.

(b) Where an inspector requires the representative sample to be analysed, it shall be done in accordance with the verification procedure set forth in Appendix VI of Annex VI to determine whether the fuel oil meets the requirements of these Regulations.

(9) An inspector shall ensure the following:

(a) a register of local suppliers of fuel oil is maintained;

(b) local suppliers provide the bunker delivery note and sample as required by this Regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of Regulations 13 and 17;

(c) local suppliers retain a copy of the bunker delivery note for at least three years for inspection and verification by the port State as necessary;

(d) action is taken, as appropriate, against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note;

(e) the Minister is informed of any ship receiving fuel oil found to be non-compliant with the requirements of Regulation 13 or this Regulation;

(f) the Organization is informed, for transmission to Parties and Member States of the Organization, of all cases where fuel oil suppliers have failed to meet the requirements specified in Regulation 13 or this Regulation.

(10) In connection with port State Inspections carried out in the State, the inspector shall—

(a) inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of non-compliant fuel oil, giving all relevant information, and

(b) ensure that remedial action as appropriate is taken to bring non-compliant fuel oil discovered into compliance.

(11) For every ship of 400 gross tonnage and above on scheduled services with frequent and regular port calls, the Minister may decide after application and consultation with affected States that compliance with paragraph (6) may be documented in an alternative manner

which gives similar certainty of compliance with Regulation 13 and this Regulation.

## PART 4 REVOCATION

### *Revocation.*

18. The Sea Pollution (Prevention of Air Pollution from Ships) Regulations 2007 (S.I. No. 728 of 2007) are revoked.

## SCHEDULE [Annex VI of the MARPOL Convention]

### REVISED MARPOL ANNEX VI

### Regulations for the Prevention of Air Pollution from Ships

#### CHAPTER I

#### GENERAL

#### **Regulation 1**

##### *Application*

The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16 and 18 of this Annex.

#### **Regulation 2**

##### *Definitions*

For the purpose of this Annex:

1 *Annex* means Annex VI to the International Convention for the Prevention of Pollution from Ships 1973 (MARPOL), as modified by the Protocol of 1978 relating thereto, and as modified by the Protocol of 1997, as 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.

2 *A similar stage of construction* means the stage at which:

- .1 construction identifiable with a specific ship begins; and
- .2 assembly of that ship has commenced comprising at least 50 tons or one per cent of the estimated mass of all structural material, whichever is less.

3 *Anniversary date* means the day and the month of each year which will correspond to the date of expiry of the International Air Pollution Prevention Certificate.

4 *Auxiliary control device* means a system, function, or control strategy installed on a marine diesel engine that is used to protect the engine and/or its ancillary equipment against operating conditions that could result in damage or failure, or that is used to facilitate the starting of the engine. An auxiliary control device may also be a strategy or measure that has

been satisfactorily demonstrated not to be a defeat device.

5 *Continuous feeding* is defined as 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 1,200°C.

6 *Defeat device* means a device which measures, senses, or responds to operating variables (e.g., engine speed, temperature, intake pressure or any other parameter) for the purpose of activating, modulating, delaying or deactivating the operation of any component or the function of the emission control system such that the effectiveness of the emission control system is reduced under conditions encountered during normal operation, unless the use of such a device is substantially included in the applied emission certification test procedures.

7 *Emission* means any release of substances, subject to control by this Annex, from ships into the atmosphere or sea.

8 *Emission Control Area* 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<sub>x</sub> or SO<sub>x</sub> and particulate matter or all three types of emissions and their attendant adverse impacts on human health and the environment. Emission Control Areas shall include those listed in, or designated under, regulations 13 and 14 of this Annex.

9 *Fuel oil* means any fuel delivered to and intended for combustion purposes for propulsion or operation on board a ship, including distillate and residual fuels.

10 *Gross tonnage* means the gross tonnage calculated in accordance with the tonnage measurement regulations contained in Annex I to the International Convention on Tonnage Measurements of Ships, 1969 or any successor Convention.

11 *Installations* in relation to regulation 12 of this Annex 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 the recharge of portable fire-extinguishing units.

12 *Installed* means 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.

13 *Irrational emission control strategy* means any strategy or measure that, when the ship is operated under normal conditions of use, reduces the effectiveness of an emission control system to a level below that expected on the applicable emission test procedures.

14 *Marine diesel engine* means any reciprocating internal combustion engine operating on liquid or dual fuel, to which regulation 13 of this Annex applies, including booster/compound systems if applied.

15 *NO<sub>x</sub> Technical Code* means the Technical Code on Control of Emission of Nitrogen

Oxides from Marine Diesel Engines adopted by resolution 2 of the 1997 MARPOL Conference, as 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.

16 *Ozone depleting substances* means 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 (also known as 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

17 *Shipboard incineration* means 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.

18 *Shipboard incinerator* means a shipboard facility designed for the primary purpose of incineration.

19 *Ships constructed* means ships the keels of which are laid or which are at a similar stage of construction.

20 *Sludge oil* means sludge from the fuel oil 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.

21 *Tanker* means an oil tanker as defined in regulation 1 of Annex I or a chemical tanker as defined in regulation 1 of Annex II of the present Convention.

### **Regulation 3**

#### ***Exceptions and Exemptions***

##### **General**

1 Regulations of this Annex shall not apply to:

.1 any emission necessary for the purpose of securing the safety of a ship or saving life at sea;

or

.2any emission resulting from damage to a ship or its equipment:

.2.1provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the emission for the purpose of preventing or minimizing the emission; and

.2.2except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result.

### **Trials for Ship Emission Reduction and Control Technology Research**

2The Administration of a Party may, in co-operation with other Administrations as appropriate, issue an exemption from specific provisions of this Annex 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 NOx Technical Code 2008 could impede research into the development of such technologies or programmes. A permit for such an exemption shall only be provided to the minimum number of ships necessary and be subject to the following provisions:

.1for marine diesel engines with a per cylinder displacement up to 30 litres, the duration of the sea trial shall not exceed 18 months. If additional time is required, a permitting Administration or Administrations may permit a renewal for one additional 18- month period; or

.2for marine diesel engines with a per cylinder displacement at or above 30 litres, the duration of the ship trial shall not exceed 5 years and shall require a progress review by the permitting Administration or Administrations at each intermediate survey. A permit may be withdrawn based on this review if the testing has not adhered to the conditions of the permit or if it is determined that the technology or programme is not likely to produce effective results in the reduction and control of ship emissions. If the reviewing Administration or Administrations determine that additional time is required to conduct a test of a particular technology or programme, a permit may be renewed for an additional time period not to exceed five years.

### **Emissions from Sea-bed Mineral Activities**

3.1Emissions directly arising from the exploration, exploitation and associated offshore processing of sea-bed mineral resources are, consistent with article 2(3)(b)(ii) of the present Convention, exempt from the provisions of this Annex. Such emissions include the following:

.1emissions resulting from the incineration of substances that are solely and directly the result of exploration, exploitation and associated offshore processing of sea-bed mineral resources, including but not limited to the flaring of hydrocarbons and the burning of cuttings, muds, and/or stimulation fluids during well completion and testing operations, and flaring arising from upset conditions;

- .2the release of gases and volatile compounds entrained in drilling fluids and cuttings;
  - .3emissions associated solely and directly with the treatment, handling, or storage of sea-bed minerals; and
  - .4emissions from marine diesel engines that are solely dedicated to the exploration, exploitation and associated offshore processing of sea-bed mineral resources.
- 3.2The requirements of regulation 18 of this Annex shall not apply to the use of hydrocarbons which are produced and subsequently used on site as fuel, when approved by the Administration.

## **Regulation 4**

### ***Equivalents***

1The Administration of a Party may 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 this Annex 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 this Annex, including any of the standards set forth in regulations 13 and 14.

2The Administration of a Party which allows a fitting, material, appliance or apparatus or other procedures, alternative fuel oils, or compliance methods used as an alternative to that required by this Annex shall communicate to the Organization for circulation to the Parties particulars thereof, for their information and appropriate action, if any.

3The Administration of a Party should take into account any relevant guidelines developed by the Organization pertaining to the equivalents provided for in this regulation.

4The Administration of a Party which allows the use of an equivalent as set forth in paragraph 1 of this regulation shall endeavour not to impair or damage its environment, human health, property, or resources or those of other States.

## **CHAPTER II**

### **SURVEY, CERTIFICATION AND MEANS OF CONTROL**

## **Regulation 5**

### ***Surveys***

1Every ship of 400 gross tonnage and above and every fixed and floating drilling rig and other platforms shall be subject to the surveys specified below:

.1An initial survey before the ship is put into service or before the certificate required under regulation 6 of this Annex is issued for the first time. This survey shall be such as to ensure that the equipment, systems, fittings, arrangements and material fully comply with the

applicable requirements of this Annex;

.2A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation 9.2, 9.5, 9.6 or 9.7 of this Annex is applicable. The renewal survey shall be such as to ensure that the equipment, systems, fittings, arrangements and material fully comply with applicable requirements of this Annex;

.3An 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 paragraph 1.4 of this regulation. The intermediate survey shall be such as to ensure that the equipment and arrangements fully comply with the applicable requirements of this Annex and are in good working order. Such intermediate surveys shall be endorsed on the certificate issued under regulation 6 or 7 of this Annex;

.4An annual survey within three months before or after each anniversary date of the certificate, including a general inspection of the equipment, systems, fittings, arrangements and material referred to in paragraph 1.1 of this regulation to ensure that they have been maintained in accordance with paragraph 4 of this regulation and that they remain satisfactory for the service for which the ship is intended. Such annual surveys shall be endorsed on the certificate issued under regulation 6 or 7 of this Annex; and

.5An additional survey either general or partial, according to the circumstances, shall be made whenever any important repairs or renewals are made as prescribed in paragraph 4 of this regulation or after a repair resulting from investigations prescribed in paragraph 5 of this regulation. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively made, that the material and workmanship of such repairs or renewals are in all respects satisfactory and that the ship complies in all respects with the requirements of this Annex.

2In the case of ships of less than 400 gross tonnage, the Administration may establish appropriate measures in order to ensure that the applicable provisions of this Annex are complied with.

3Surveys of ships as regards the enforcement of the provisions of this Annex shall be carried out by officers of the Administration.

.1The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. Such organizations shall comply with the guidelines adopted by the Organization;<sup>1</sup>

1 Refer to the Guidelines for the authorization of organizations acting on behalf of the Administration, adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration, adopted by the Organization by resolution A.789(19), as may be amended by the Organization.

.2The survey of marine diesel engines and equipment for compliance with regulation 13 of this Annex shall be conducted in accordance with the revised NOx Technical Code 2008;



.3When a nominated surveyor or recognized organization 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 in due course notify the Administration. If such corrective action is not taken, the certificate shall be withdrawn by the Administration. If the ship is in a port of another Party, the appropriate authorities of the port State shall also be notified immediately. When an officer of the Administration, a nominated surveyor or recognized organization has notified the appropriate authorities of the port State, the Government of the port State concerned shall give such officer, surveyor or organization any necessary assistance to carry out their obligations under this regulation; and

.4In every case, the Administration concerned shall fully guarantee the completeness and efficiency of the survey and shall undertake to ensure the necessary arrangements to satisfy this obligation.

4The equipment shall be maintained to conform with the provisions of this Annex and no changes shall be made in the equipment, systems, fittings, arrangements, or material covered by the survey, without the express approval of the Administration. The direct replacement of such equipment and fittings with equipment and fittings that conform with the provisions of this Annex is permitted.

5Whenever an accident occurs to a ship or a defect is discovered which substantially affects the efficiency or completeness of its equipment covered by this Annex, the master or owner of the ship shall report at the earliest opportunity to the Administration, a nominated surveyor, or recognized organization responsible for issuing the relevant certificate.

## **Regulation 6**

### ***Issue or endorsement of a Certificate***

1An International Air Pollution Prevention Certificate shall be issued, after an initial or renewal survey in accordance with the provisions of regulation 5 of this Annex, to:

.1any ship of 400 gross tonnage and above engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties; and

.2platforms and drilling rigs engaged in voyages to waters under the sovereignty or jurisdiction of other Parties.

2A ship constructed before the date of entry into force of Annex VI for such ship's Administration shall be issued with an International Air Pollution Prevention Certificate in accordance with paragraph 1 of this regulation no later than the first scheduled dry-docking after the date of such entry into force, but in no case later than three years after this date.

3Such certificate shall be issued or endorsed either by the Administration or by any person or organization duly authorized by it. In every case, the Administration assumes full responsibility for the certificate.

## **Regulation 7**

### ***Issue of a Certificate by another Party***

1A Party may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this Annex are complied with, shall issue or authorize the issuance of an International Air Pollution Prevention Certificate to the ship, and where appropriate, endorse or authorize the endorsement of that certificate on the ship, in accordance with this Annex.

2A copy of the certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

3A certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as a certificate issued under regulation 6 of this Annex.

4No International Air Pollution Prevention Certificate shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

## **Regulation 8**

### ***Form of Certificate***

The International Air Pollution Prevention Certificate shall be drawn up in a form corresponding to the model given in appendix I to this Annex and shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.

## **Regulation 9**

### ***Duration and Validity of Certificate***

1An International Air Pollution Prevention Certificate shall be issued for a period specified by the Administration, which shall not exceed five years.

2Notwithstanding the requirements of paragraph 1 of this regulation:

.1when the renewal survey is completed within three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate;

.2when the renewal survey is completed after the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of expiry of the existing certificate; and

.3when the renewal survey is completed more than three months before the expiry date of the existing certificate, the new certificate shall be valid from the date of completion of the renewal survey to a date not exceeding five years from the date of completion of the renewal survey.

3If a certificate is issued for a period of less than five years, the Administration may extend the validity of the certificate beyond the expiry date to the maximum period specified in paragraph 1 of this regulation, provided that the surveys referred to in regulations 5.1.3 and

5.1.4 of this Annex applicable when a certificate is issued for a period of five years are carried out as appropriate.

4If a renewal survey has been completed and a new certificate cannot be issued or placed on board the ship before the expiry date of the existing certificate, the person or organization authorized by the Administration may endorse the existing certificate and such a certificate shall be accepted as valid for a further period which shall not exceed five months from the expiry date.

5If a ship, at the time when a certificate expires, is not in a port in which it is to be surveyed, the Administration may extend the period of validity of the certificate but this extension shall be granted only for the purpose of allowing the ship to complete its voyage to the port in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. No certificate shall be extended for a period longer than three months, and a ship to which an extension is granted shall not, on its arrival in the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port without having a new certificate. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding five years from the date of expiry of the existing certificate before the extension was granted.

6A certificate issued to a ship engaged on short voyages which has not been extended under the foregoing provisions of this regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it. When the renewal survey is completed, the new certificate shall be valid to a date not exceeding five years from the date of expiry of the existing certificate before the extension was granted.

7In special circumstances, as determined by the Administration, a new certificate need not be dated from the date of expiry of the existing certificate as required by paragraph 2.1, 5 or 6 of this regulation. In these special circumstances, the new certificate shall be valid to a date not exceeding five years from the date of completion of the renewal survey.

8If an annual or intermediate survey is completed before the period specified in regulation 5 of this Annex, then:

.1the anniversary date shown on the certificate shall be amended by endorsement to a date which shall not be more than three months later than the date on which the survey was completed;

.2the subsequent annual or intermediate survey required by regulation 5 of this Annex shall be completed at the intervals prescribed by that regulation using the new anniversary date; and

.3the expiry date may remain unchanged provided one or more annual or intermediate surveys, as appropriate, are carried out so that the maximum intervals between the surveys prescribed by regulation 5 of this Annex are not exceeded.

9A certificate issued under regulation 6 or 7 of this Annex shall cease to be valid in any of the following cases:

.1 If the relevant surveys are not completed within the periods specified under regulation 5.1 of this Annex;

.2 If the certificate is not endorsed in accordance with regulation 5.1.3 or 5.1.4 of this Annex; and

.3 Upon transfer of the ship to the flag of another State. A new certificate shall only be issued when the Government issuing the new certificate is fully satisfied that the ship is in compliance with the requirements of regulation 5.4 of this Annex. In the case of a transfer between Parties, if requested within three months after the transfer has taken place, the Government of the Party whose flag the ship was formerly entitled to fly shall, as soon as possible, transmit to the Administration copies of the certificate carried by the ship before the transfer and, if available, copies of the relevant survey reports.

## **Regulation 10**

### ***Port State Control on Operational Requirements***

1 A ship, when in a port or an offshore terminal under the jurisdiction of another Party, is subject to inspection by officers duly authorized by such Party concerning operational requirements under this Annex, 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.

2 In the circumstances given in paragraph 1 of this regulation, the Party shall take such steps as to ensure that the ship shall not sail until the situation has been brought to order in accordance with the requirements of this Annex.

3 Procedures relating to the port State control prescribed in article 5 of the present Convention shall apply to this regulation.

4 Nothing in this regulation shall be construed to limit the rights and obligations of a Party carrying out control over operational requirements specifically provided for in the present Convention.

## **Regulation 11**

### ***Detection of Violations and Enforcement***

1 Parties shall co-operate in the detection of violations and the enforcement of the provisions of this Annex, using all appropriate and practicable measures of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence.

2 A ship to which this Annex applies may, in any port or offshore terminal of a Party, be subject to inspection by officers appointed or authorized by that Party for the purpose of verifying whether the ship has emitted any of the substances covered by this Annex in violation of the provision of this Annex. If an inspection indicates a violation of this Annex, a report shall be forwarded to the Administration for any appropriate action.

3 Any Party shall furnish to the Administration evidence, if any, that the ship has emitted any

of the substances covered by this Annex in violation of the provisions of this Annex. If it is practicable to do so, the competent authority of the former Party shall notify the master of the ship of the alleged violation.

4 Upon receiving such evidence, the Administration so informed shall investigate the matter, and may request the other Party to furnish further or better evidence of the alleged contravention. If the Administration is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken in accordance with its law as soon as possible. The Administration shall promptly inform the Party which has reported the alleged violation, as well as the Organization, of the action taken.

5 A Party may also inspect a ship to which this Annex applies when it enters the ports or offshore terminals under its jurisdiction, if a request for an investigation is received from any Party together with sufficient evidence that the ship has emitted any of the substances covered by the Annex in any place in violation of this Annex. The report of such investigation shall be sent to the Party requesting it and to the Administration so that the appropriate action may be taken under the present Convention.

6 The international law concerning the prevention, reduction, and control of pollution of the marine environment from ships, including that law relating to enforcement and safeguards, in force at the time of application or interpretation of this Annex, applies, *mutatis mutandis*, to the rules and standards set forth in this Annex.

### **CHAPTER III**

#### **REQUIREMENTS FOR CONTROL OF EMISSIONS FROM SHIPS**

##### **Regulation 12**

###### ***Ozone Depleting Substances***

1 This regulation does not apply to permanently sealed equipment where there are no refrigerant charging connections or potentially removable components containing ozone depleting substances.

2 Subject to the provisions of regulation 3.1, any deliberate emissions of ozone depleting substances shall be prohibited. Deliberate emissions include emissions occurring in the course of maintaining, servicing, repairing or disposing of systems or equipment, except that deliberate emissions do not include minimal releases associated with the recapture or recycling of an ozone depleting substance. Emissions arising from leaks of an ozone depleting substance, whether or not the leaks are deliberate, may be regulated by Parties.

3.1 Installations which contain ozone depleting substances, other than hydro-chlorofluorocarbons, shall be prohibited:

.1 on ships constructed on or after 19 May 2005; or

.2 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.

3.2 Installations which contain hydro-chlorofluorocarbons shall be prohibited:

.1 on ships constructed on or after 1 January 2020; or

.2 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 this regulation, and equipment containing such substances, shall be delivered to appropriate reception facilities when removed from ships.

5 Each ship subject to regulation 6.1 shall maintain a list of equipment containing ozone depleting substances.<sup>2</sup>

2 See Appendix I, Supplement to International Air Pollution Prevention Certificate (IAPP Certificate), section 2.1.

6 Each ship subject to regulation 6.1 which has rechargeable systems that contain ozone depleting substances shall maintain an Ozone Depleting Substances Record Book. This Record Book may form part of an existing log-book or electronic recording system as approved by the Administration.

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:

.1 recharge, full or partial, of equipment containing ozone depleting substances;

.2 repair or maintenance of equipment containing ozone depleting substances;

.3 discharge of ozone depleting substances to the atmosphere:

.3.1 deliberate; and

.3.2 non-deliberate;

.4 discharge of ozone depleting substances to land-based reception facilities; and

.5 supply of ozone depleting substances to the ship.

## **Regulation 13**

### ***Nitrogen Oxides (NO<sub>x</sub>)***

#### **Application**

1.1 This regulation shall apply to:

.1 each marine diesel engine with a power output of more than 130 kW installed on a ship; and

.2each 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 which it is replacing and is otherwise not covered under paragraph 1.1.1 of this regulation.

1.2This regulation does not apply to:

.1a marine diesel engine intended to be used solely for emergencies, or solely to power any device or equipment intended to be used solely for emergencies on the ship on which it is installed, or a marine diesel engine installed in lifeboats intended to be used solely for emergencies; and

.2a marine diesel engine installed on a ship solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State the flag of which the ship is entitled to fly, provided that such engine is subject to an alternative NO<sub>x</sub> control measure established by the Administration.

1.3Notwithstanding the provisions of subparagraph 1.1 of this paragraph, the Administration may provide an exclusion from the application of this regulation for any marine diesel engine which is installed on a ship constructed, or for any marine diesel engine which undergoes a major conversion, before 19 May 2005, provided that the ship on which the engine is installed is solely engaged in voyages to ports or offshore terminals within the State the flag of which the ship is entitled to fly.

### **Major Conversion**

2.1For the purpose of this regulation, major conversion 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, 4, or 5.1.1 of this regulation where:

.1the engine is replaced by a marine diesel engine or an additional marine diesel engine is installed, or

.2any substantial modification, as defined in the revised NO<sub>x</sub> Technical Code 2008, is made to the engine, or

.3the 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.

2.2For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply. On or after 1 January 2016, in the case of replacement engines only, if it is not possible for such a replacement engine to meet the standards set forth in paragraph 5.1.1 of this regulation (Tier III), then that replacement engine shall meet the standards set forth in paragraph 4 of this regulation (Tier II). Guidelines are to be developed by the Organization to set forth the criteria of when it is not possible for a replacement engine to meet the standards in subparagraph 5.1.1 of this regulation.

2.3A marine diesel engine referred to in paragraph 2.1.2 or 2.1.3 shall meet the following

standards:

.1for ships constructed prior to 1 January 2000, the standards set forth in paragraph 3 of this regulation shall apply; and

.2for ships constructed on or after 1 January 2000, the standards in force at the time the ship was constructed shall apply.

### **Tier I**

3Subject to regulation 3 of this Annex, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2000 and prior to 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

.117.0 g/kWh when n is less than 130 rpm;

.245 . n(-0.2) g/kWh when n is 130 or more but less than 2,000 rpm;

.39.8 g/kWh when n is 2,000 rpm or more.

### **Tier II**

4Subject to regulation 3 of this Annex, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2011 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

.114.4 g/kWh when n is less than 130 rpm;

.244 . n(-0.23) g/kWh when n is 130 or more but less than 2,000 rpm;

.37.7 g/kWh when n is 2,000 rpm or more.

### **Tier III**

5.1Subject to regulation 3 of this Annex, the operation of a marine diesel engine which is installed on a ship constructed on or after 1 January 2016:

.1is prohibited except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

.1.13.4 g/kWh when n is less than 130 rpm;

.1.29 . n(-0.2) g/kWh when n is 130 or more but less than 2,000 rpm; and

.1.32.0g/kWh when n is 2,000 rpm or more;

.2is subject to the standards set forth in subparagraph 5.1.1 of this paragraph when the ship is



operating in an Emission Control Area designated under paragraph 6 of this regulation; and

.3is subject to the standards set forth in paragraph 4 of this regulation when the ship is operating outside of an Emission Control Area designated under paragraph 6 of this regulation.

5.2Subject to the review set forth in paragraph 10 of this regulation, the standards set forth in paragraph 5.1.1 of this regulation shall not apply to:

.1a marine diesel engine installed on a ship with a length (L), as defined in regulation 1.19 of Annex I to the present Convention, less than 24 metres when it has been specifically designed, and is used solely, for recreational purposes; or

.2a marine diesel engine installed on a ship with a combined nameplate diesel engine propulsion power of less than 750 kW if it is demonstrated, to the satisfaction of the Administration, that the ship cannot comply with the standards set forth in paragraph 5.1.1 of this regulation because of design or construction limitations of the ship.

### **Emission Control Area**

6For the purpose of this regulation, an Emission Control Area shall be any sea area, including any port area, designated by the Organization in accordance with the criteria and procedures set forth in appendix III to this Annex.

### **Marine Diesel Engines Installed on a Ship Constructed Prior to 1 January 2000**

7.1Notwithstanding paragraph 1.1.1 of this regulation, a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000 shall comply with the emission limits set forth in subparagraph 7.4 of this paragraph, 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 Organization by the certifying Administration. Compliance with this paragraph shall be demonstrated through one of the following:

.1installation of the certified Approved Method, as confirmed by a survey using the verification procedure specified in the Approved Method File, including appropriate notation on the ship's International Air Pollution Prevention Certificate of the presence of the Approved Method; or

.2certification of the engine confirming that it operates within the limits set forth in paragraph 3, 4, or 5.1.1 of this regulation and an appropriate notation of the engine certification on the ship's International Air Pollution Prevention Certificate.

7.2Subparagraph 7.1 shall apply no later than the first renewal survey that occurs 12 months or more after deposit of the notification in subparagraph 7.1. If a shipowner of a 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, then that Approved Method shall be installed on the ship no later than the next annual survey of that ship which falls after the Approved Method is commercially

available.

7.3 With regard to a ship with a marine diesel engine with a power output of more than 5,000 kW and a per cylinder displacement at or above 90 litres installed on a ship constructed on or after 1 January 1990 but prior to 1 January 2000, the International Air Pollution Prevention Certificate shall, for a marine diesel engine to which paragraph 7.1 of this regulation applies, indicate that either an Approved Method has been applied pursuant to paragraph 7.1.1 of this regulation or the engine has been certified pursuant to paragraph 7.1.2 of this regulation or that an Approved Method does not yet exist or is not yet commercially available as described in subparagraph 7.2 of this regulation.

7.4 Subject to regulation 3 of this Annex, the operation of a marine diesel engine described in subparagraph 7.1 is prohibited, except when the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits, where n = rated engine speed (crankshaft revolutions per minute):

.1 17.0 g/kWh when n is less than 130 rpm;

.2  $245 \cdot n^{-0.2}$  g/kWh when n is 130 or more but less than 2,000 rpm; and

.3 39.8 g/kWh when n is 2,000 rpm or more.

7.5 Certification of an Approved Method shall be in accordance with chapter 7 of the revised NO<sub>x</sub> Technical Code 2008 and shall include verification:

.1 by the designer of the base marine diesel engine to which the Approved Method applies that the calculated effect of the Approved Method will not decrease engine rating by more than 1.0%, increase fuel consumption by more than 2.0% as measured according to the appropriate test cycle set forth in the revised NO<sub>x</sub> Technical Code 2008, or adversely affect engine durability or reliability; and

.2 that the cost of the Approved Method is not excessive, which is determined by a comparison of the amount of NO<sub>x</sub> reduced by the Approved Method to achieve the standard set forth in subparagraph 7.4 of this paragraph and the cost of purchasing and installing such Approved Method.<sup>3</sup>

3 The cost of an Approved Method shall not exceed 375 Special Drawing Rights/metric ton NO<sub>x</sub> calculated in accordance with the Cost-Effectiveness formula below:  $C_e = \frac{\text{Cost of Approved Method}}{106P(kW) \cdot 0.768 \cdot 6000(\text{hours/year}) \cdot 5(\text{years}) \cdot \text{NO}_x(\text{g/kWh})}$

## **Certification**

8 The revised NO<sub>x</sub> Technical Code 2008 shall be applied in the certification, testing, and measurement procedures for the standards set forth in this regulation.

9 The procedures for determining NO<sub>x</sub> emissions set out in the revised NO<sub>x</sub> Technical Code 2008 are intended to be representative of the normal operation of the engine. Defeat devices and irrational emission control strategies undermine this intention and shall not be allowed. This regulation shall not prevent the use of auxiliary control devices that are used to protect the engine and/or its ancillary equipment against operating conditions that could result in

damage or failure or that are used to facilitate the starting of the engine.

## **Review**

10Beginning in 2012 and completed no later than 2013, the Organization shall review the status of the technological developments to implement the standards set forth in paragraph 5.1.1 of this regulation and shall, if proven necessary, adjust the time periods set forth in that subparagraph.

## **Regulation 14**

### ***Sulphur Oxides (SO<sub>x</sub>) and Particulate Matter***

#### **General Requirements**

1The sulphur content of any fuel oil used on board ships shall not exceed the following limits:

- .14.50% m/m prior to 1 January 2012;
- .23.50% m/m on and after 1 January 2012; and
- .30.50% m/m on and after 1 January 2020.

2The worldwide average sulphur content of residual fuel oil supplied for use on board ships shall be monitored taking into account guidelines developed by the Organization.<sup>4</sup>

4 MEPC.82(43), “Guidelines for Monitoring the World-wide Average Sulphur Content of Residual Fuel Oils Supplied for Use On Board Ships”.

#### **Requirements within Emission Control Areas**

3For the purpose of this regulation, Emission Control Areas shall include:

- .1the Baltic Sea area as defined in regulation 1.11.2 of Annex I, the North Sea as defined in regulation 5(1)(f) of Annex V; and
- .2any other sea area, including port areas, designated by the Organization in accordance with criteria and procedures set forth in appendix III to this Annex.

4While ships are operating within an Emission Control Area, the sulphur content of fuel oil used on board ships shall not exceed the following limits:

- .11.50% m/m prior to 1 July 2010;
- .21.00% m/m on and after 1 July 2010; and
- .30.10% m/m on and after 1 January 2015.

5The sulphur content of fuel oil referred to in paragraph 1 and paragraph 4 of this regulation shall be documented by its supplier as required by regulation 18 of this Annex.

6Those ships using separate fuel oils to comply with paragraph 4 of this regulation and

entering or leaving an Emission Control Area set forth in paragraph 3 of this regulation shall 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 specified in paragraph 4 of this regulation prior to entry into an Emission Control Area. 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 Emission Control Area or commenced after exit from such an area, shall be recorded in such log-book as prescribed by the Administration.

7 During the first twelve months immediately following an amendment designating a specific Emission Control Area under paragraph 3.2 of this regulation, ships operating in that Emission Control Area are exempt from the requirements in paragraphs 4 and 6 of this regulation and from the requirements of paragraph 5 of this regulation insofar as they relate to paragraph 4 of this regulation.

### **Review Provision**

8 A review of the standard set forth in subparagraph 1.3 of this regulation shall be completed by 2018 to determine the availability of fuel oil to comply with the fuel oil standard set forth in that paragraph and shall take into account the following elements:

- .1 the global market supply and demand for fuel oil to comply with paragraph 1.3 of this regulation that exist at the time that the review is conducted;
- .2 an analysis of the trends in fuel oil markets; and
- .3 any other relevant issue.

9 The Organization shall establish a group of experts, comprising of representatives with the appropriate expertise in the fuel oil market and appropriate maritime, environmental, scientific, and legal expertise, to conduct the review referred to in paragraph 8 of this regulation. The group of experts shall develop the appropriate information to inform the decision to be taken by the Parties.

10 The Parties, based on the information developed by the group of experts, may decide whether it is possible for ships to comply with the date in paragraph 1.3 of this regulation. If a decision is taken that it is not possible for ships to comply, then the standard in that subparagraph shall become effective on 1 January 2025.

## **Regulation 15**

### ***Volatile Organic Compounds (VOCs)***

1 If the emissions of VOCs from a tanker are to be regulated in a port or ports or a terminal or terminals under the jurisdiction of a Party, they shall be regulated in accordance with the provisions of this regulation.

2 A Party regulating tankers for VOC emissions shall submit a notification to the Organization. This notification shall include information on the size of tankers to be controlled, the cargoes requiring vapour emission control systems, and the effective date of

such control. The notification shall be submitted at least six months before the effective date.

3A Party which designates ports or terminals at which VOCs emissions from tankers are to be regulated shall ensure that vapour emission control systems, approved by that Party taking into account the safety standards for such systems developed by the Organization <sup>5</sup>, are provided in any designated port and terminal and are operated safely and in a manner so as to avoid undue delay to a ship.

4The Organization shall circulate a list of the ports and terminals designated by Parties to other Parties and Member States of the Organization for their information.

5A tanker to which paragraph 1 of this regulation applies shall be provided with a vapour emission collection system approved by the Administration taking into account the safety standards for such systems developed by the Organization <sup>5</sup>, and shall use this system during the loading of relevant cargoes. A port or terminal which has installed vapour emission control systems in accordance with this regulation may accept tankers which are not fitted with vapour collection systems for a period of three years after the effective date identified in paragraph 2 of this regulation.

5 MSC/Circ.585, Standards for vapour emission control systems.

6A tanker carrying crude oil shall have on board and implement a VOC Management Plan approved by the Administration. Such a plan shall be prepared taking into account the guidelines developed by the Organization. The plan shall be specific to each ship and shall at least:

.1provide written procedures for minimizing VOC emissions during the loading, sea passage and discharge of cargo;

.2give consideration to the additional VOC generated by crude oil washing;

.3identify a person responsible for implementing the plan; and

.4for ships on international voyages, be written in the working language of the master and officers and, if the working language of the master and officers is not English, French, or Spanish, include a translation into one of these languages.

7This regulation shall also apply to gas carriers only if the type of loading and containment systems allow safe retention of non-methane VOCs on board or their safe return ashore. <sup>6</sup>

6 MSC.30(61), "International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk", chapter 5.

## **Regulation 16**

### ***Shipboard Incineration***

1Except as provided in paragraph 4 of this regulation, shipboard incineration shall be allowed only in a shipboard incinerator.

2Shipboard incineration of the following substances shall be prohibited:

- .1residues of cargoes subject to Annex I, II or III or related contaminated packing materials;
- .2polychlorinated biphenyls (PCBs);
- .3garbage, as defined by Annex V, containing more than traces of heavy metals;
- .4refined petroleum products containing halogen compounds;
- .5sewage sludge and sludge oil either of which are not generated on board the ship; and
- .6exhaust gas cleaning system residues.

3Shipboard incineration of polyvinyl chlorides (PVCs) shall be prohibited, except in shipboard incinerator for which an IMO Type Approval Certificate<sup>7</sup> has been issued.

7 Type Approval Certificates issued in accordance with resolution MEPC.59(33) or MEPC.76(40).

4Shipboard incineration of sewage sludge and sludge oil generated during normal operation of a ship may also take place in the main or auxiliary power plant or boilers, but in those cases, shall not take place inside ports, harbours and estuaries.

5Nothing in this regulation neither:

.1affects the prohibition in, or other requirements of, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, as amended, and the 1996 Protocol thereto, nor

.2precludes the development, installation and operation of alternative design shipboard thermal waste treatment devices that meet or exceed the requirements of this regulation.

6.1Except as provided in subparagraph 6.2 of this paragraph, each incinerator on a ship constructed on or after 1 January 2000 or incinerator which is installed on board a ship on or after 1 January 2000 shall meet the requirements contained in appendix IV to this Annex. Each incinerator subject to this subparagraph shall be approved by the Administration taking into account the standard specification for shipboard incinerators developed by the Organization<sup>8</sup>; or

8 Refer to resolution MEPC.76(40), Standard specification for shipboard incinerators.

6.2The Administration may allow exclusion from the application of subparagraph 6.1 of this paragraph to any incinerator which is installed on board a ship before 19 May 2005, provided that the ship is solely engaged in voyages within waters subject to the sovereignty or jurisdiction of the State the flag of which the ship is entitled to fly.

7Incinerators installed in accordance with the requirements of paragraph 6.1 of this regulation shall be provided with a manufacturer's operating manual which is to be retained with the unit and which shall specify how to operate the incinerator within the limits described in paragraph 2 of appendix IV of this Annex.

8Personnel responsible for the operation of an incinerator installed in accordance with the

requirements of paragraph 6.1 of this regulation shall be trained to implement the guidance provided in the manufacturer's operating manual as required by paragraph 7 of this regulation.

9For incinerators installed in accordance with the requirements of paragraph 6.1 of this regulation the combustion chamber gas outlet temperature shall be monitored at all times the unit is in operation. Where that incinerator is of the continuous-feed type, waste shall not be fed into the unit when the combustion chamber gas outlet temperature is below 850°C. Where that incinerator is of the batch-loaded type, the unit shall be designed so that the combustion chamber gas outlet temperature shall reach 600°C within five minutes after start-up and will thereafter stabilize at a temperature not less than 850°C.

## **Regulation 17**

### ***Reception Facilities***

1Each Party undertakes to ensure the provision of facilities adequate to meet the:

.1needs of ships using its repair ports for the reception of ozone depleting substances and equipment containing such substances when removed from ships;

.2needs of ships using its ports, terminals or repair ports for the reception of exhaust gas cleaning residues from an exhaust gas cleaning system, without causing undue delay to ships; and

.3needs in ship-breaking facilities for the reception of ozone depleting substances and equipment containing such substances when removed from ships.

2If a particular port or terminal of a Party is — taking into account the guidelines to be developed by the Organization — remotely located from, or lacking in, the industrial infrastructure necessary to manage and process those substances referred to in paragraph 1 of this regulation and therefore cannot accept such substances, then the Party shall inform the Organization of any such port or terminal so that this information may be circulated to all Parties and Member States of the Organization for their information and any appropriate action. Each Party that has provided the Organization with such information shall also notify the Organization of its ports and terminals where reception facilities are available to manage and process such substances.

3Each Party shall notify the Organization for transmission to the Members of the Organization of all cases where the facilities provided under this regulation are unavailable or alleged to be inadequate.

## **Regulation 18**

### ***Fuel Oil Availability and Quality***

#### **Fuel Oil Availability**

1Each Party shall take all reasonable steps to promote the availability of fuel oils which

comply with this Annex and inform the Organization of the availability of compliant fuel oils in its ports and terminals.

2.1 If a ship is found by a Party not to be in compliance with the standards for compliant fuel oils set forth in this Annex, the competent authority of the Party is entitled to require the ship to:

.1 present a record of the actions taken to attempt to achieve compliance; and

.2 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.

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

2.3 If a ship provides the information set forth in subparagraph 2.1 of this paragraph, a Party shall take into account all relevant circumstances and the evidence presented to determine the appropriate action to take, including not taking control measures.

2.4 A ship shall notify its Administration and the competent authority of the relevant port of destination when it cannot purchase compliant fuel oil.

2.5 A Party shall notify the Organization when a ship has presented evidence of the non-availability of compliant fuel oil.

### **Fuel Oil Quality**

3 Fuel oil for combustion purposes delivered to and used on board ships to which this Annex applies shall meet the following requirements:

.1 except as provided in subparagraph 3.2:

.1.1 the fuel oil shall be blends of hydrocarbons derived from petroleum refining. This shall not preclude the incorporation of small amounts of additives intended to improve some aspects of performance;

.1.2 the fuel oil shall be free from inorganic acid; and

.1.3 the fuel oil shall not include any added substance or chemical waste which:

.1.3.1 jeopardizes the safety of ships or adversely affects the performance of the machinery, or

.1.3.2 is harmful to personnel, or

.1.3.3 contributes overall to additional air pollution.

.2 fuel oil for combustion purposes derived by methods other than petroleum refining shall not:



- .2.1 exceed the applicable sulphur content set forth in regulation 14 of this Annex;
- .2.2 cause an engine to exceed the applicable NOx emission limit set forth in paragraphs 3, 4, 5.1.1 and 7.4 of regulation 13;
- .2.3 contain inorganic acid; or
- .2.4.1 jeopardize the safety of ships or adversely affect the performance of the machinery, or
- .2.4.2 be harmful to personnel, or
- .2.4.3 contribute overall to additional air pollution.

4 This regulation does not apply to coal in its solid form or nuclear fuels. Paragraphs 5, 6, 7.1, 7.2, 8.1, 8.2, 9.2, 9.3, and 9.4 of this regulation do not apply to gas fuels such as Liquefied Natural Gas, Compressed Natural Gas or Liquefied Petroleum Gas. The sulphur content of gas fuels delivered to a ship specifically for combustion purposes on board that ship shall be documented by the supplier.

5 For each ship subject to regulations 5 and 6 of this Annex, details of fuel oil for combustion purposes delivered to and used on board shall be recorded by means of a bunker delivery note which shall contain at least the information specified in appendix V to this Annex.

6 The bunker delivery note shall be kept on board the ship in such a place as to be readily available for inspection at all reasonable times. It shall be retained for a period of three years after the fuel oil has been delivered on board.

7.1 The competent authority of a Party may inspect the bunker delivery notes on board any ship to which this Annex applies while the ship is in its port or offshore terminal, may make a copy of each delivery note, and may require the master or person in charge of the ship to certify that each copy is a true copy of such bunker delivery note. The competent authority may also verify the contents of each note through consultations with the port where the note was issued.

7.2 The inspection of the bunker delivery notes and the taking of certified copies by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

8.1 The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines developed by the Organization.<sup>9</sup> The sample is to be sealed and signed by the supplier's representative and the master or officer in charge of the bunker operation on completion of bunkering operations and retained under the 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.

9 Refer to MEPC.96(47), "Guidelines for the Sampling of Fuel Oil for Determination of Compliance with Annex VI of MARPOL 73/78".

8.2 If an Administration requires the representative sample to be analysed, it shall be done in accordance with the verification procedure set forth in Appendix VI to determine whether the

fuel oil meets the requirements of this Annex.

9 Parties undertake to ensure that appropriate authorities designated by them:

- .1 maintain a register of local suppliers of fuel oil;
- .2 require local suppliers to provide the bunker delivery note and sample as required by this regulation, certified by the fuel oil supplier that the fuel oil meets the requirements of regulations 14 and 18 of this Annex;
- .3 require local suppliers to retain a copy of the bunker delivery note for at least three years for inspection and verification by the port State as necessary;
- .4 take action as appropriate against fuel oil suppliers that have been found to deliver fuel oil that does not comply with that stated on the bunker delivery note;
- .5 inform the Administration of any ship receiving fuel oil found to be non-compliant with the requirements of regulation 14 or 18 of this Annex; and
- .6 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 specified in regulations 14 or 18 of this Annex.

10 In connection with port State inspections carried out by Parties, the Parties further undertake to:

- .1 inform the Party or non-Party under whose jurisdiction a bunker delivery note was issued of cases of delivery of non-compliant fuel oil, giving all relevant information; and
- .2 ensure that remedial action as appropriate is taken to bring non-compliant fuel oil discovered into compliance.

11 For every ship of 400 gross tonnage and above on scheduled services with frequent and regular port calls, an Administration may decide after application and consultation with affected States that compliance with paragraph 6 of this regulation may be documented in an alternative manner which gives similar certainty of compliance with regulations 14 and 18 of this Annex.

## **APPENDIX I**

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

#### **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:

*(full designation of the country)*

by

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

***Particulars of ship \****

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

Name of ship

Distinctive number or letters

Port of registry

Gross tonnage

IMO Number <sup>+</sup>

+ In accordance with IMO ship identification number scheme, adopted by the Organization by resolution A.600(15).

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.

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

This Certificate is valid until..... <sup>†</sup> subject to surveys in accordance with regulation 5 of Annex VI of the Convention.

<sup>†</sup> Insert the date of expiry as specified by the Administration in accordance with regulation 9.1 of Annex VI of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation 2.3 of Annex VI of the Convention, unless amended in accordance with regulation 9.8 of Annex VI of the Convention.

Issued

at.....

*(Place of issue of certificate)*

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

*(Date of issue)(Signature of 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 authorized official)*

Place:.....

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

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

Annual/Intermediate \* survey:Signed:.....

\* Delete as appropriate.

*(Signature of authorized official)*

Place:.....

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

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

Annual/Intermediate \* survey:Signed:.....

*(Signature of authorized official)*

Place:.....

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

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

Annual survey:Signed:.....

*(Signature of authorized official)*

Place:.....

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

*(Seal or stamp of the authority, 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:

\* Delete as appropriate.

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)*

**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):

\* Delete as appropriate.

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)*

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

**RECORD OF CONSTRUCTION AND EQUIPMENT**

Notes:1This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.2The Record shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.3Entries 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.4Unless otherwise stated, regulations mentioned in this Record refer to regulations 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

1.2 IMO number

1.3 Date on which keel was laid or ship was at a similar stage of construction

1.4 Length (L) # metres

# Completed only in respect of ships constructed on or after 1 January 2016, which are specially designed, and used solely, for recreational purposes and to which, in accordance with regulation 13.5.2.1, the NO<sub>x</sub> emission limit as given by regulation 13.5.1.1 will not apply.

## **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 than hydro-chlorofluorocarbons, installed before 19 May 2005 may continue in service:

<b>System or equipment</b>	<b>Location on board</b>	<b>Substance</b>
----------------------------	--------------------------	------------------

2.1.2 The following systems containing hydro-chlorofluorocarbons (HCFCs) installed before 1 January 2020 may continue in service:

<b>System or equipment</b>	<b>Location on board</b>	<b>Substance</b>
----------------------------	--------------------------	------------------

### *2.2 Nitrogen oxides (NO<sub>x</sub>) (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<sub>x</sub> Technical Code 2008:

	<b>Engine#</b>	<b>Engine#</b>	<b>Engine#</b>	<b>Engine#</b>	<b>Engine#</b>	<b>Engine#</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Manufacturer and model</b>						
<b>Serial number</b>						
<b>Use</b>						
<b>Power output (kW)</b>						
<b>Rated speed (RPM)</b>						
<b>Date of installation(dd/mm/yyyy)</b>						
<b>Date of major conversion</b>						
<b>According to</b>						

n Reg.13.2.2  
(dd/mm/yyyy) According  
to  
Reg.13.2.3

**Exempted by  
regulation13.1.1.2**

**Tier I** Reg. 13.3

**Tier II** Reg. 13.4

**Tier II** Reg. 13.2.2 or 13.5.2

**Tier III** Reg. 13.5.1.1

**Approved Method exists**

**Approved Method not  
commercially available**

**Approved Method installed**

### *2.3 Sulphur oxides (SO<sub>x</sub>) and particulate matter (regulation 14)*

2.3.1 When the ship operates within an Emission Control Area specified in regulation 14.3, the ship uses:

- .1fuel oil with a sulphur content that does not exceed the applicable limit value as documented by bunker delivery notes; or
- .2an equivalent arrangement approved in accordance with regulation 4.1 as listed in 2.6

### *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:

.1installed on or after 1 January 2000 which complies with resolution MEPC.76(40) as amended

.2installed before 1 January 2000 which complies with:

.2.1resolution MEPC.59(33)

.2.2resolution MEPC.76(40)

### *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 or equipment    Equivalent used    Approval Reference**

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)*

**APPENDIX II**

**TEST CYCLES AND WEIGHTING FACTORS**

**(Regulation 13)**

The following test cycles and weighing factors shall be applied for verification of compliance of marine diesel engines with the applicable NOx limit in accordance with regulation 13 of this Annex using the test procedure and calculation method as specified in the revised NOx Technical Code 2008.

.1For constant-speed marine engines for ship main propulsion, including diesel-electric drive, test cycle E2 shall be applied;

.2For controllable-pitch propeller sets test cycle E2 shall be applied;

.3For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied;

.4For constant-speed auxiliary engines test cycle D2 shall be applied; and

.5For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

Test cycle for *constant speed main propulsion* application(including diesel-electric drive and all controllable-pitch propeller installations)

	Speed	100%	100%	100%	100%
Test cycle type E2	Power	100%	75%	50%	25%
	Weighting factor	0.2	0.5	0.15	0.15

Test cycle for *propeller-law-operated main* and *propeller-law-operated auxiliary engine* application

	Speed	100%	91%	80%	63%
Test cycle type E3	Power	100%	75%	50%	25%
	Weighting factor	0.2	0.5	0.15	0.15

Test cycle for *constant-speed auxiliary engine* application

	Speed	100%	100%	100%	100%	100%
Test cycle type E2	Power	100%	75%	50%	25%	10%
	Weighting factor	0.05	0.25	0.3	0.3	0.1

Test cycle for *variable-speed and load auxiliary engine* application

Test cycle type C1	Speed	Rated	Intermediate				Idle		
	Torque	100%	75%	50%	10%	100%	75%	50%	0%
	Weighting factor	0.15	0.15	0.15	0.1	0.1	0.1	0.1	0.15

In the case of an engine to be certified in accordance with subparagraph 5.1.1 of regulation 13, the specific emission at each individual mode point shall not exceed the applicable NO<sub>x</sub> emission limit value by more than 50% except as follows:

- .1The 10% mode point in the D2 test cycle.
- .2The 10% mode point in the C1 test cycle.
- .3The idle mode point in the C1 test cycle.

### APPENDIX III

#### CRITERIA AND PROCEDURES FOR DESIGNATION OF EMISSION CONTROL AREAS

(Regulation 13.6 and regulation 14.3)

#### 1 OBJECTIVES

1.1 The purpose of this appendix is to provide the criteria and procedures to Parties for the formulation and submission of proposals for the designation of Emission Control Areas and to set forth the factors to be considered in the assessment of such proposals by the Organization.

1.2 Emissions of NO<sub>x</sub>, SO<sub>x</sub> and particulate matter from ocean-going ships contribute to ambient concentrations of air pollution in cities and coastal areas around the world. Adverse public health and environmental effects associated with air pollution include premature mortality, cardiopulmonary disease, lung cancer, chronic respiratory ailments, acidification

and eutrophication.

1.3 An Emission Control Area should be considered for adoption by the Organization if supported by a demonstrated need to prevent, reduce, and control emissions of NO<sub>x</sub> or SO<sub>x</sub> and particulate matter or all three types of emissions (hereinafter emissions) from ships.

## **2 PROCESS FOR THE DESIGNATION OF EMISSION CONTROL AREAS**

2.1 A proposal to the Organization for designation of an Emission Control Area for NO<sub>x</sub> or SO<sub>x</sub> and particulate matter or all three types of emissions may be submitted only by Parties. Where two or more Parties have a common interest in a particular area, they should formulate a coordinated proposal.

2.2 A proposal to designate a given area as an Emission Control Area should be submitted to the Organization in accordance with the rules and procedures established by the Organization.

## **3 CRITERIA FOR DESIGNATION OF AN EMISSION CONTROL AREA**

3.1 The proposal shall include:

.1a clear delineation of the proposed area of application, along with a reference chart on which the area is marked;

.2the type or types of emission(s) that is or are being proposed for control (i.e. NO<sub>x</sub> or SO<sub>x</sub> and particulate matter or all three types of emissions);

.3a description of the human populations and environmental areas at risk from the impacts of ship emissions;

.4an assessment that emissions from ships operating in the proposed area of application are contributing to ambient concentrations of air pollution or to adverse environmental impacts. Such assessment shall include a description of the impacts of the relevant emissions on human health and the environment, such as adverse impacts to terrestrial and aquatic ecosystems, areas of natural productivity, critical habitats, water quality, human health, and areas of cultural and scientific significance, if applicable. The sources of relevant data including methodologies used shall be identified;

.5relevant information pertaining to the meteorological conditions in the proposed area of application to the human populations and environmental areas at risk, in particular prevailing wind patterns, or to topographical, geological, oceanographic, morphological, or other conditions that contribute to ambient concentrations of air pollution or adverse environmental impacts;

.6the nature of the ship traffic in the proposed Emission Control Area, including the patterns and density of such traffic;

.7a description of the control measures taken by the proposing Party or Parties addressing land-based sources of NO<sub>x</sub>, SO<sub>x</sub> and particulate matter emissions affecting the human populations and environmental areas at risk that are in place and operating concurrent with

the consideration of measures to be adopted in relation to provisions of regulations 13 and 14 of Annex VI; and

.8the relative costs of reducing emissions from ships when compared with land-based controls, and the economic impacts on shipping engaged in international trade.

3.2 The geographical limits of an Emission Control Area will be based on the relevant criteria outlined above, including emissions and deposition from ships navigating in the proposed area, traffic patterns and density, and wind conditions.

#### **4 PROCEDURES FOR THE ASSESSMENT AND ADOPTION OF EMISSION CONTROL AREAS BY THE ORGANIZATION**

4.1 The Organization shall consider each proposal submitted to it by a Party or Parties.

4.2 In assessing the proposal, the Organization shall take into account the criteria which are to be included in each proposal for adoption as set forth in section 3 above.

4.3 An Emission Control Area shall be designated by means of an amendment to this Annex, considered, adopted and brought into force in accordance with article 16 of the present Convention.

#### **5 OPERATION OF EMISSION CONTROL AREAS**

5.1 Parties which have ships navigating in the area are encouraged to bring to the Organization any concerns regarding the operation of the area.

### **APPENDIX IV**

#### **TYPE APPROVAL AND OPERATING LIMITS FOR SHIPBOARD INCINERATORS**

##### **(Regulation 16)**

1 Ships incinerators described in regulation 16.6.1 on board shall possess an IMO type approval certificate for each incinerator. In order to obtain such certificate, the incinerator shall be designed and built to an approved standard as described in regulation 16.6.1. Each model shall be subject to a specified type approval test operation at the factory or an approved test facility, and under the responsibility of the Administration, using the following standard fuel/waste specification for the type approval test for determining whether the incinerator operates within the limits specified in paragraph 2 of this appendix:

Sludge Oil	75% Sludge oil from HFO; 5% waste
Consisting of:	lubricating oil; and 20% emulsified water.
Solid waste	50% food waste; 50% rubbish
consisting of:	containing; approx. 30% paper, “ 40% cardboard, “ 10% rags, “ 20% plastic The mixture will have up to 50% moisture and 7% incombustible solids.

2 Incinerators described in regulation 16.6.1 shall operate within the following limits:

O<sub>2</sub> in combustion chamber: 6 — 12%

CO in flue gas maximum average: 200 mg/MJ

Soot number maximum average: Bacharach 3 or Ringelman 1 (20% opacity)(A higher soot number is acceptable only during very short periods such as starting up)

Unburned components in ash residues: Maximum 10% by Weight

Combustion chamber flue gas outlet temperature range: 850 — 1,200°C

## **APPENDIX V**

### **INFORMATION TO BE INCLUDED IN THE BUNKER DELIVERY NOTE**

#### **(Regulation 18.5)**

Name and IMO Number of receiving ship

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/m<sup>3</sup> \* \*

\* Fuel oil shall be tested in accordance with ISO 3675:1998 or ISO 12185:1996.

Sulphur content (%m/m) \*\*

\*\* Fuel oil shall be tested in accordance with ISO 8754:2003.

A declaration signed and certified by the fuel oil supplier's representative that the fuel oil supplied is in conformity with the applicable subparagraph of regulation 14.1 or 14.4 and regulation 18.3 of this Annex.

## **APPENDIX VI**

### **FUEL VERIFICATION PROCEDURE FOR MARPOL ANNEX VI FUEL OIL SAMPLES**

## **(Regulation 18.8.2)**

The following procedure shall be used to determine whether the fuel oil delivered to and used on board ships is compliant with the sulphur limits required by regulation 14 of Annex VI.

### **1 General Requirements**

1.1 The representative fuel oil sample, which is required by paragraph 8.1 of regulation 18 (the “MARPOL sample”) shall be used to verify the sulphur content of the fuel oil supplied to a ship.

1.2 An Administration, through its competent authority, shall manage the verification procedure.

1.3 The laboratories responsible for the verification procedure set forth in this appendix shall be fully accredited \* for the purpose of conducting the tests.

\* Accreditation is in accordance with ISO 17025 or an equivalent standard.

### **2 Verification Procedure Stage 1**

2.1 The MARPOL sample shall be delivered by the competent authority to the laboratory.

2.2 The laboratory shall:

- .1record the details of the seal number and the sample label on the test record;
- .2confirm that the condition of the seal on the MARPOL sample has not been broken; and
- .3reject any MARPOL sample where the seal has been broken.

2.3 If the seal of the MARPOL sample has not been broken, the laboratory shall proceed with the verification procedure and shall:

- .1ensure that the MARPOL sample is thoroughly homogenized;
- .2draw two sub-samples from the MARPOL sample; and
- .3reseal the MARPOL sample and record the new reseal details on the test record.

2.4 The two sub-samples shall be tested in succession, in accordance with the specified test method referred to in appendix V. For the purposes of this verification procedure, the results of the test analysis shall be referred to as “A” and “B”:

- .1If the results of “A” and “B” are within the repeatability (r) of the test method, the results shall be considered valid.
- .2If the results of “A” and “B” are not within the repeatability (r) of the test method, both results shall be rejected and two new sub-samples should be taken by the laboratory and analysed. The sample bottle should be resealed in accordance with paragraph 2.3.3 above after the new sub-samples have been taken.

2.5 If the test results of “A” and “B” are valid, an average of these two results should be calculated thus giving the result referred to as “X”:

.1 If the result of “X” is equal to or falls below the applicable limit required by Annex VI, the fuel oil shall be deemed to meet the requirements.

.2 If the result of “X” is greater than the applicable limit required by Annex VI, Verification Procedure Stage 2 should be conducted; however, if the result of “X” is greater than the specification limit by 0.59R (where R is the reproducibility of the test method), the fuel oil shall be considered non-compliant and no further testing is necessary.

### **3 Verification Procedure Stage 2**

3.1 If Stage 2 of the verification procedure is necessary in accordance with paragraph 2.5.2 above, the competent authority shall send the MARPOL sample to a second accredited laboratory.

3.2 Upon receiving the MARPOL sample, the laboratory shall:

.1 record the details of the reseal number applied in accordance with 2.3.3 and the sample label on the test record;

.2 draw two sub-samples from the MARPOL sample; and

.3 reseal the MARPOL sample and record the new reseal details on the test record.

3.3 The two sub-samples shall be tested in succession, in accordance with the test method specified in appendix V. For the purposes of this verification procedure, the results of the test analysis shall be referred to as “C” and “D”:

.1 If the results of “C” and “D” are within the repeatability (r) of the test method, the results shall be considered valid.

.2 If the results of “C” and “D” are not within the repeatability (r) of the test method, both results shall be rejected and two new sub-samples shall be taken by the laboratory and analysed. The sample bottle should be resealed in accordance with paragraph 3.2.3 after the new sub-samples have been taken.

3.4 If the test results of “C” and “D” are valid, and the results of “A”, “B”, “C”, and “D” are within the reproducibility (R) of the test method then the laboratory shall average the results, which is referred to as “Y”:

.1 If the result of “Y” is equal to or falls below the applicable limit required by Annex VI, the fuel oil shall be deemed to meet the requirements.

.2 If the result of “Y” is greater than the applicable limit required by Annex VI, then the fuel oil fails to meet the standards required by Annex VI.

3.5 If the result of “A”, “B”, “C” and “D” are not within the reproducibility (R) of the test method then the Administration may discard all of the test results and, at its discretion, repeat the entire testing process.

3.6 The results obtained from the verification procedure are final.

\*\*\*



GIVEN under my Official Seal,

23 June 2010.

NOEL DEMPSEY,

Minister for Transport.

#### EXPLANATORY NOTE.

*(This note is not part of the Instrument and does not purport to be a legal interpretation.)*

These Regulations give effect to the 2008 revision of Annex VI as added to the International Convention for the Prevention of Pollution from Ships (MARPOL Convention) by its Protocol adopted by the International Maritime Organization on 26 September 1997.

The Regulations, which apply to Irish ships everywhere and to other ships when they are in the inland waters and territorial seas of the State, control emissions from ships with a view to protecting human health and preventing air pollution.

The Regulations provide for improved specification of marine diesel engines in order to reduce the emission of nitrogen oxides; reduction of sulphur content of marine fuels in order to reduce sulphur oxide emissions; and a mechanism for the setting up of Emission Control Areas where shipping is particularly busy or where population may be concentrated near a maritime area, and in which higher standards of emission control are to apply. The Regulations also provide for improved regulation of ozone-depleting substances, volatile organic compounds, shipboard incineration of wastes and cargo residues, and port reception facilities.

Section 29 of the Sea Pollution Act 1991 provides for penalties for breaches of these Regulations.

1 Refer to the Guidelines for the authorization of organizations acting on behalf of the Administration, adopted by the Organization by resolution A.739(18), as may be amended by the Organization, and the Specifications on the survey and certification functions of recognized organizations acting on behalf of the Administration, adopted by the Organization by resolution A.789(19), as may be amended by the Organization.

2 See Appendix I, Supplement to International Air Pollution Prevention Certificate (IAPP Certificate), section 2.1.



3 The cost of an Approved Method shall not exceed 375 Special Drawing Rights/metric ton NO<sub>x</sub> calculated in accordance with the Cost-Effectiveness formula below:
$$Ce = \frac{\text{Cost of Approved Method}}{106P(kW) \times 0.768 \times 6000(\text{hours/year}) \times 5 (\text{years}) \times \text{NO}_x (\text{g/kWh})}$$

4 MEPC.82(43), “Guidelines for Monitoring the World-wide Average Sulphur Content of Residual Fuel Oils Supplied for Use On Board Ships”.

5 MSC/Circ.585, Standards for vapour emission control systems.

6 MSC.30(61), “International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk”, chapter 5.

7 Type Approval Certificates issued in accordance with resolution MEPC.59(33) or MEPC.76(40).

8 Refer to resolution MEPC.76(40), Standard specification for shipboard incinerators.

9 Refer to MEPC.96(47), “Guidelines for the Sampling of Fuel Oil for Determination of Compliance with Annex VI of MARPOL 73/78”.

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

+ In accordance with IMO ship identification number scheme, adopted by the Organization by resolution A.600(15).

† Insert the date of expiry as specified by the Administration in accordance with regulation 9.1 of Annex VI of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation 2.3 of Annex VI of the Convention, unless amended in accordance with regulation 9.8 of Annex VI of the Convention.

\* Delete as appropriate.

\* Delete as appropriate.

\* Delete as appropriate.

\* Fuel oil shall be tested in accordance with ISO 3675:1998 or ISO 12185:1996.

\*\* Fuel oil shall be tested in accordance with ISO 8754:2003.

\* Accreditation is in accordance with ISO 17025 or an equivalent standard.

