

ผนวก ข.

Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships of 2 November 1973, as modified by the Protocol of 17 February 1978

*(London, 26 September 1997)*

(New Annex VI - Regulations for the Prevention of Air Pollution from Ships)

THE PARTIES TO THE PRESENT PROTOCOL,

BEING Parties to the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973,

RECOGNIZING the need to prevent and control air pollution from ships,

RECOGNIZING Principle 15 of the Rio Declaration on Environment and Development which calls for the application of a precautionary approach,

CONSIDERING that this objective could best be achieved by the conclusion of a Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto,

HAVE AGREED as follows:

**Article 1**

**Instrument to be amended**

The instrument which the present Protocol amends is the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (hereinafter referred to as the "Convention").

## Article 2

### Addition of Annex VI to the Convention

Annex VI entitled Regulations for the Prevention of Air Pollution from Ships, the text of which is set out in the Annex to the present Protocol, is added.

## Article 3

### General obligations

1. The Convention and the present Protocol shall, as between the Parties to the present Protocol, be read and interpreted together as one single instrument.
2. Every reference to the present Protocol constitutes at the same time a reference to the Annex hereto.

## Article 4

### Amendment procedure

In applying Article 16 of the Convention to an amendment to Annex VI and its appendices, the reference to "a Party to the Convention" shall be deemed to mean the reference to a Party bound by that Annex.

## FINAL CLAUSES

## Article 5

### Signature, ratification, acceptance, approval and accession

1. The present Protocol shall be open for signature at the Headquarters of the International Maritime Organization (hereinafter referred to as the "Organization") from 1 January 1998 until 31 December 1998 and shall thereafter remain open for accession. Only Contracting States to the Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 (hereinafter referred to as the "1978 Protocol") may become Parties to the present Protocol by:

- (a) signature without reservation as to ratification, acceptance or approval; or
- (b) signature, subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or
- (c) accession.

2. Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General of the Organization (hereinafter referred to as the "Secretary-General").

## **Article 6**

### **Entry into force**

1. The present Protocol shall enter into force twelve months after the date on which not less than fifteen States, the combined merchant fleets of which constitute not less than 50 percent of the gross tonnage of the world's merchant shipping, have become Parties to it in accordance with Article 5 of the present Protocol.

2. Any instrument of ratification, acceptance, approval or accession deposited after the date on which the present Protocol enters into force shall take effect three months after the date of deposit.

3. After the date on which an amendment to the present Protocol is deemed to have been accepted in accordance with Article 16 of the Convention, any instrument of ratification, acceptance, approval or accession deposited shall apply to the present Protocol as amended.

## **Article 7**

### **Denunciation**

1. The present Protocol may be denounced by any Party to the present Protocol at any time after the expiry of five years from the date on which the Protocol enters into force for that Party.

2. Denunciation shall be effected by the deposit of an instrument of denunciation with the Secretary-General.

3. A denunciation shall take effect twelve months after receipt of the notification by the Secretary-General or after the expiry of any other longer period which may be indicated in the notification.

4. A denunciation of the 1978 Protocol in accordance with Article VII thereof shall be deemed to include a denunciation of the present Protocol in accordance with this Article. Such denunciation shall take effect on the date on which denunciation of the 1978 Protocol takes effect in accordance with Article VII of that Protocol.

## Article 8

### Depositary

1. The present Protocol shall be deposited with the Secretary-General (hereinafter referred to as the "Depositary").

2. The Depositary shall:

(a) inform all States which have signed the present Protocol or acceded thereto of:

(i) each new signature or deposit of an instrument of ratification, acceptance, approval or accession, together with the date thereof;

(ii) the date of entry into force of the present Protocol; and

(iii) the deposit of any instrument of denunciation of the present Protocol, together with the date on which it was received and the date on which the denunciation takes effect; and

(b) transmit certified true copies of the present Protocol to all States which have signed the present Protocol or acceded thereto.

3. As soon as the present Protocol enters into force, a certified true copy thereof shall be transmitted by the Depositary to the Secretariat of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

#### Article 9

#### Languages

The present Protocol is established in a single copy in the Arabic, Chinese, English, French, Russian and Spanish languages, each text being equally authentic.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments for that purpose, have signed the present Protocol.

DONE at London this twenty-sixth day of September, one thousand nine hundred and ninety-seven.

#### ANNEX

#### ADDITION OF ANNEX VI TO THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973, AS MODIFIED BY THE PROTOCOL OF 1978 RELATING THERETO

The following new Annex VI is added after the existing Annex V:

#### 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, 18 and 19 of this Annex.

## Regulation 2

### Definitions

For the purpose of this Annex:

(1) "A similar stage of construction" means the stage at which:

(a) construction identifiable with a specific ship begins; and

(b) assembly of that ship has commenced comprising at least 50 tonnes or one percent of the estimated mass of all structural material, whichever is less.

(2) "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 850C and 1200C.

(3) "Emission" means any release of substances, subject to control by this Annex from ships into the atmosphere or sea.

(4) "New installations", in relation to Regulation 12 of this Annex, means the installation of systems, equipment, including new portable fire extinguishing units, insulation, or other material on a ship after the date on which this Annex enters into force, but excludes repair or recharge of previously installed systems, equipment, insulation, or other material, or recharge of portable fire extinguishing units.

(5) "NO<sub>x</sub> Technical Code" means the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines adopted by Conference Resolution 2, as may be amended by the Organization, provided that such amendments are adopted and brought into force in accordance with the provisions of Article 16 of the present Convention concerning amendment procedures applicable to an appendix to an Annex.

(6) "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

(7) "Sludge oil" means sludge from the fuel or lubricating oil separators, waste lubricating oil from main or auxiliary machinery, or waste oil from bilge water separators, oil filtering equipment or drip trays.

(8) "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.

(9) "Shipboard incinerator" means a shipboard facility designed for the primary purpose of incineration.

(10) "Ships constructed" means ships the keels of which are laid or which are at a similar stage of construction.

(11) "SO<sub>x</sub> Emission Control Area" means an area where the adoption of special mandatory measures for SO<sub>x</sub> emissions from ships is required to prevent, reduce and control air pollution from SO<sub>x</sub> and its attendant adverse impacts on land and sea areas. SO<sub>x</sub> Emission Control Areas shall include those listed in Regulation 14 of this Annex.

(12) "Tanker" means an oil tanker as defined in Regulation 1(4) of Annex I or a chemical tanker as defined in Regulation 1(1) of Annex II of the present Convention.

(13) "The Protocol of 1997" means the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto.

### Regulation 3

#### General exceptions

Regulations of this Annex shall not apply to:

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

(b) any emission resulting from damage to a ship or its equipment:

(i) provided 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

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

## Regulation 4

### Equivalents

(1) The Administration may allow any fitting, material, appliance or apparatus to be fitted in a ship as an alternative to that required by this Annex if such fitting, material, appliance or apparatus is at least as effective as that required by this Annex.

(2) The Administration which allows a fitting, material, appliance or apparatus as an alternative to that required by this Annex shall communicate to the Organization for circulation to the Parties to the present Convention particulars thereof, for their information and appropriate action, if any.

## CHAPTER II

### SURVEY, CERTIFICATION AND MEANS OF CONTROL

## Regulation 5

### Surveys and inspections

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

(a) an 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;

(b) periodical surveys at intervals specified by the Administration, but not exceeding five years, which shall be such as to ensure that the equipment, systems, fittings, arrangements and material fully comply with the requirements of this Annex; and

(c) a minimum of one intermediate survey during the period of validity of the certificate which shall be such as to ensure that the equipment and arrangements fully comply with the requirements of this Annex and are in good working order. In cases where only one

such intermediate survey is carried out in a single certificate validity period, and where the period of the certificate exceeds 21/2 years, it shall be held within six months before or after the halfway date of the certificate's period of validity. Such intermediate surveys shall be endorsed on the certificate issued under Regulation 6 of this Annex.

(2) In 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.

(3) Surveys of ships as regards the enforcement of the provisions of this Annex shall be carried out by officers of the Administration. The 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. In every case the Administration concerned shall fully guarantee the completeness and efficiency of the survey.

(4) The survey of engines and equipment for compliance with Regulation 13 of this Annex shall be conducted in accordance with the NOx Technical Code.

(5) The Administration shall institute arrangements for unscheduled inspections to be carried out during the period of validity of the certificate. Such inspections shall ensure that the equipment remains in all respects satisfactory for the service for which the equipment is intended. These inspections may be carried out by their own inspection service, nominated surveyors, recognized organizations, or by other Parties upon request of the Administration. Where the Administration, under the provisions of paragraph (1) of this Regulation, establishes mandatory annual surveys, the above unscheduled inspections shall not be obligatory.

(6) When 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 should 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.

(7) The 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.

(8) Whenever 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 of International Air Pollution Prevention Certificate**

(1) An International Air Pollution Prevention Certificate shall be issued, after survey in accordance with the provisions of Regulation 5 of this Annex, to:

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

(b) platforms and drilling rigs engaged in voyages to waters under the sovereignty or jurisdiction of other Parties to the Protocol of 1997.

(2) Ships constructed before the date of entry into force of the Protocol of 1997 shall be issued with an International Air Pollution Prevention Certificate in accordance with

paragraph (1) of this Regulation no later than the first scheduled drydocking after entry into force of the Protocol of 1997, but in no case later than 3 years after entry into force of the Protocol of 1997.

(3) Such certificate shall be issued 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 Government**

(1) The Government of a Party to the Protocol of 1997 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, issue or authorize the issuance of an International Air Pollution Prevention Certificate to the ship in accordance with this Annex.

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

(3) A 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.

(4) No 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 to the protocol of 1997.

## **Regulation 8**

### **Form of Certificate**

The International Air Pollution Prevention Certificate shall be drawn up in an official language of the issuing country in the form corresponding to the model given in Appendix I to this Annex. If the language used is not English, French or Spanish, the text shall include a translation into one of these languages.

## Regulation 9

### Duration and validity of Certificate

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

(2) No extension of the five-year period of validity of the International Air Pollution Prevention Certificate shall be permitted, except in accordance with paragraph (3).

(3) If the ship, at the time when the International Air Pollution Prevention Certificate expires, is not in a port of the State whose flag it is entitled to fly or in which it is to be surveyed, the Administration may extend the certificate for a period of no more than 5 months. Such extension shall be granted only for the purpose of allowing the ship to complete its voyage to the State whose flag it is entitled to fly or in which it is to be surveyed, and then only in cases where it appears proper and reasonable to do so. After arrival in the State whose flag it is entitled to fly or in which it is to be surveyed, the ship shall not be entitled by virtue of such extension to leave the port or State without having obtained a new International Air Pollution Prevention Certificate.

(4) An International Air Pollution Prevention Certificate shall cease to be valid in any of the following circumstances:

(a) if the inspections and surveys are not carried out within the periods specified under Regulation 5 of this Annex;

(b) if significant alterations have taken place to the equipment, systems, fittings, arrangements or material to which this Annex applies without the express approval of the Administration, except the direct replacement of such equipment or fittings with equipment or fittings that conform with the requirements of this Annex. For the purpose of Regulation 13, significant alteration shall include any change or adjustment to the system, fittings, or arrangement of a diesel engine which results in the nitrogen oxide limits applied to that engine no longer being complied with; or

(c) upon transfer of the ship to the flag of another State. A new certificate shall be issued only when the Government issuing the new certificate is fully satisfied that the ship is in full compliance with the requirements of Regulation 5 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 of the other Party a copy of the International Air Pollution Prevention 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 to the Protocol of 1997, 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 will 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 to this Annex shall cooperate 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 the present 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 provisions 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) Subject to the provisions of Regulation 3, 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 to the Protocol of 1997.

(2) New installations which contain ozone depleting substances shall be prohibited on all ships, except that new installations containing hydro-chlorofluorocarbons (HCFCs) are permitted until 1 January 2020.

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

## Regulation 13

### Nitrogen oxides (NO<sub>x</sub>)

(1) (a) This Regulation shall apply to:

(i) each diesel engine with a power output of more than 130kW which is installed on a ship constructed on or after 1 January 2000; and

(ii) each diesel engine with a power output of more than 130 kW which undergoes a major conversion on or after 1 January 2000.

(b) This Regulation does not apply to:

(i) emergency diesel engines, engines installed in lifeboats and any device or equipment intended to be used solely in case of emergency; and

(ii) engines installed on ships 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 engines are subject to an alternative NO<sub>x</sub> control measure established by the Administration.

(c) Notwithstanding the provisions of subparagraph (a) of this paragraph, the Administration may allow exclusion from the application of this Regulation to any diesel engine which is installed on a ship constructed, or on a ship which undergoes a major conversion, before the date of entry into force of the present Protocol, provided that the ship is solely engaged in voyages to ports or offshore terminals within the State the flag of which the ship is entitled to fly.

(2) (a) For the purpose of this Regulation, "major conversion" means a modification of an engine where:

(i) the engine is replaced by a new engine built on or after 1 January 2000, or

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

(iii) the maximum continuous rating of the engine is increased by more than 10%.

(b) The NO<sub>x</sub> emission resulting from modifications referred to in the subparagraph (a) of this paragraph shall be documented in accordance with the NO<sub>x</sub> Technical Code for approval by the Administration.

(3) (a) Subject to the provision of Regulation 3 of this Annex, the operating of each diesel engine to which this Regulation applies is prohibited, except where the emission of nitrogen oxides (calculated as the total weighted emission of NO<sub>2</sub>) from the engine is within the following limits:

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

(ii)  $45.0 \cdot n^{(-0.2)}$  g/kWh when n is 130 or more but less than 2000 rpm

(iii) 9.8 g/kWh when n is 2000 rpm or more

where n = rated engine speed (crankshaft revolutions per minute).

When using fuel composed of blends from hydrocarbons derived from petroleum refining, test procedure and measurement methods shall be in accordance with the NO<sub>x</sub> Technical Code, taking into consideration the Test Cycles and Weighting Factors outlined in Appendix II to this Annex.

(b) Notwithstanding the provisions of subparagraph (a) of this paragraph, the operation of a diesel engine is permitted when:

(i) an exhaust gas cleaning system, approved by the Administration in accordance with the NO<sub>x</sub> Technical Code, is applied to the engine to reduce onboard NO<sub>x</sub> emissions at least to the limits specified in subparagraph (a), or

(ii) any other equivalent method, approved by the Administration taking into account relevant guidelines to be developed by the Organization, is applied to reduce onboard NO<sub>x</sub> emissions at least to the limit specified in subparagraph (a) of this paragraph.

## Regulation 14

### Sulphur oxides (SO<sub>x</sub>)

#### General requirements

- (1) The sulphur content of any fuel oil used on board ships shall not exceed 4.5% m/m.
- (2) The worldwide average sulphur content of residual fuel oil supplied for use on board ships shall be monitored taking into account guidelines to be developed by the Organization.

#### Requirements within SO<sub>x</sub> Emission Control Areas

- (3) For the purpose of this Regulation, SO<sub>x</sub> Emission Control Areas shall include:
  - (a) the Baltic Sea area as defined in Regulation 10(1)(b) of Annex I; and
  - (b) any other sea area, including port areas, designated by the Organization in accordance with criteria and procedures for designation of SO<sub>x</sub> Emission Control Areas with respect to the prevention of air pollution from ships contained in Appendix III to this Annex.
- (4) While ships are within SO<sub>x</sub> Emission Control Areas, at least one of the following conditions shall be fulfilled:
  - (a) the sulphur content of fuel oil used on board ships in a SO<sub>x</sub> Emission Control Area does not exceed 1.5% m/m;
  - (b) an exhaust gas cleaning system, approved by the Administration taking into account guidelines to be developed by the Organization, is applied to reduce the total emission of sulphur oxides from ships, including both auxiliary and main propulsion engines, to 6.0 g SO<sub>x</sub>/kWh or less calculated as the total weight of sulphur dioxide emission. Waste streams from the use of such equipment shall not be discharged into enclosed ports, harbours and estuaries unless it can be thoroughly documented by the ship that such waste streams have no adverse impact on the ecosystems of such enclosed ports,

harbours and estuaries, based upon criteria communicated by the authorities of the port State to the Organization. The Organization shall circulate the criteria to all Parties to the Convention; or

(c) any other technological method that is verifiable and enforceable to limit SO<sub>x</sub> emissions to a level equivalent to that described in subparagraph (b) is applied. These methods shall be approved by the Administration taking into account guidelines to be developed by the Organization.

(5) The sulphur content of fuel oil referred to in paragraph (1) and paragraph 4(a) of this Regulation shall be documented by the supplier as required by Regulation 18 of this Annex.

(6) Those ships using separate fuel oils to comply with paragraph (4)(a) of this Regulation shall allow sufficient time for the fuel oil service system to be fully flushed of all fuels exceeding 1.5% m/m sulphur content prior to entry into a SO<sub>x</sub> Emission Control Area. The volume of low sulphur fuel oils (less than or equal to 1.5% sulphur content) in each tank as well as the date, time and position of the ship when any fuel-changeover operation is completed, shall be recorded in such log-book as prescribed by the Administration.

(7) During the first twelve months immediately following entry into force of the present Protocol, or of an amendment to the present Protocol designating a specific SO<sub>x</sub> Emission Control Area under paragraph (3)(b) of this Regulation, ships entering a SO<sub>x</sub> Emission Control Area referred to in paragraph (3)(a) of this Regulation or designated under paragraph (3)(b) of this Regulation are exempted 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)(a) of this Regulation.

## Regulation 15

### Volatile organic compounds

(1) If the emissions of volatile organic compounds (VOCs) from tankers are to be regulated in ports or terminals under the jurisdiction of a Party to the Protocol of 1997, they shall be regulated in accordance with the provisions of this Regulation.

(2) A Party to the Protocol of 1997 which designates ports or terminals under its jurisdiction in which VOCs emissions are to be regulated, shall submit a notification to the Organization. This notification shall include information on the size of tankers to be controlled, on 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.

(3) The Government of each Party to the protocol of 1997 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 Government taking into account the safety standards developed by the Organization, are provided in ports and terminals designated, and are operated safely and in a manner so as to avoid undue delay to the ship.

(4) The Organization shall circulate a list of the ports and terminals designated by the Parties to the Protocol of 1997 to other Parties to the Protocol of 1997 and Member States of the Organization for their information.

(5) All tankers which are subject to vapour emission control in accordance with the provisions of paragraph (2) of this Regulation shall be provided with a vapour collection system approved by the Administration taking into account the safety standards developed by the Organization, and shall use such system during the loading of such cargoes. Terminals which have installed vapour emission control systems in accordance with this Regulation may accept existing tankers which are not fitted with vapour

collection systems for a period of three years after the effective date identified in paragraph (2).

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

## **Regulation 16**

### **Shipboard incineration**

(1) Except as provided in paragraph (5), shipboard incineration shall be allowed only in a shipboard incinerator.

(2) (a) Except as provided in subparagraph (b) of this paragraph, each incinerator installed on board a ship on or after 1 January 2000 shall meet the requirements contained in Appendix IV to this Annex. Each incinerator shall be approved by the Administration taking into account the standard specifications for shipboard incinerators developed by the Organization.

(b) The Administration may allow exclusion from the application of subparagraph (a) of this paragraph to any incinerator which is installed on board a ship before the date of entry into force of the Protocol of 1997, 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.

(3) Nothing in this Regulation affects 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.

(4) Shipboard incineration of the following substances shall be prohibited:

(a) Annex I, II and III cargo residues of the present Convention and related contaminated packing materials;

(b) polychlorinated biphenyls (PCBs);

(c) garbage, as defined in Annex V of the present Convention, containing more than traces of heavy metals; and

(d) refined petroleum products containing halogen compounds.

(5) Shipboard incineration of sewage sludge and sludge oil generated during the 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.

(6) Shipboard incineration of polyvinyl chlorides (PVCs) shall be prohibited, except in shipboard incinerators for which IMO type Approval Certificates have been issued.

(7) All ships with incinerators subject to this Regulation shall possess a manufacturer's operating manual which shall specify how to operate the incinerator within the limits described in paragraph 2 of Appendix IV to this Annex.

(8) Personnel responsible for operation of any incinerator shall be trained and capable of implementing the guidance provided in the manufacturer's operating manual.

(9) Monitoring of combustion flue gas outlet temperature shall be required at all times and waste shall not be fed into a continuous-feed shipboard incinerator when the temperature is below the minimum allowed temperature of 850C. For batch-loaded shipboard incinerators, the unit shall be designed so that the temperature in the combustion chamber shall reach 600C within 5 minutes after start-up.

(10) Nothing in this Regulation precludes the development, installation and operation of alternative design shipboard thermal waste treatment devices that meet or exceed the requirements of this Regulation.

## Regulation 17

### Reception facilities

(1) The Government of each Party to the Protocol of 1997 undertakes to ensure the provision of facilities adequate to meet the:

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

(b) needs of ships using its ports, terminals or repair ports for the reception of exhaust gas cleaning residues from an approved exhaust gas cleaning system when discharge into the marine environment of these residues is not permitted under Regulation 14 of this Annex;

without causing undue delay to ships, and

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

(2) Each Party to the Protocol of 1997 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 quality

(1) Fuel oil for combustion purposes delivered to and used on board ships to which this Annex applies 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. 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 either:

(1) jeopardizes the safety of ships or adversely affects the performance of the machinery, or

(2) is harmful to personnel, or

(3) contributes overall to additional air pollution; and

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

(i) exceed the sulphur content set forth in Regulation 14 of this Annex;

(ii) cause an engine to exceed the NO<sub>x</sub> emission limits set forth in Regulation 13(3)(a) of this Annex;

(iii) contain inorganic acid; and

(iv) (1) jeopardize the safety of ships or adversely affect the performance of the machinery, or

(2) be harmful to personnel, or

(3) contribute overall to additional air pollution.

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

(3) 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.

(4) 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.

(5) (a) The competent authority of the Government of a Party to the Protocol of 1997 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.

(b) 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.

(6) The bunker delivery note shall be accompanied by a representative sample of the fuel oil delivered taking into account guidelines to be developed by the Organization. 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 twelve months from the time of delivery.

(7) Parties to the Protocol of 1997 undertake to ensure that appropriate authorities designated by them:

(a) maintain a register of local suppliers of fuel oil;

(b) 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;

(c) require local suppliers to retain a copy of the bunker delivery note for at least 3 years for inspection and verification by the port State as necessary;

(d) 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;

(e) inform the Administration of any ship receiving fuel oil found to be noncompliant with the requirements of Regulations 14 or 18 of this Annex; and

(f) inform the Organization for transmission to Parties to the Protocol of 1997 of all cases where fuel oil suppliers have failed to meet the requirements specified in Regulations 14 or 18 of this Annex.

(8) In connection with port State inspections carried out by Parties to the Protocol of 1997, the Parties further undertake to:

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

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

## Regulation 19

### Requirements for platforms and drilling rigs

(1) Subject to the provisions of paragraphs (2) and (3) of this Regulation, fixed and floating platforms and drilling rigs shall comply with the requirements of this Annex.

(2) Emissions 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:

(a) emissions 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;

(b) the release of gases of volatile compounds entrained in drilling fluids and cuttings;

(c) emissions associated solely and directly with the treatment, handling, or storage of sea-bed minerals; and

(d) emissions from diesel engines that are solely dedicated to the exploration, exploitation and associated offshore processing of sea-bed mineral resources.

(3) The 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.

## APPENDIX I

### FORM OF IAPP CERTIFICATE

(Regulation 8)

#### INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 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)*

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

Type of ship: tanker

ships other than a tanker

THIS IS TO CERTIFY:

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

This certificate is valid until

subject to surveys in accordance with Regulation 5 of Annex VI of the Convention.

Issued at

*(Place of issue of certificate )*

.....

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

*issuing the certificate )*

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

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

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

Annual survey: Signed

(Signature of duly authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Annual\*/Intermediate\* survey: Signed

(Signature of duly authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Annual\*/Intermediate\* survey: Signed

(Signature of duly authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

Annual survey: Signed

(Signature of duly authorized official)

Place

Date

(Seal or stamp of the authority, as appropriate)

\* Delete as appropriate

## SUPPLEMENT TO INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

(IAPP CERTIFICATE)

## RECORD OF CONSTRUCTION AND EQUIPMENT

In respect of the provisions of Annex VI of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (hereinafter referred to as "the Convention").

## Notes:

1. This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.
2. If the language of the original Record is not English, French or Spanish, the text shall include a translation into one of these languages.
3. Entries in boxes shall be made by inserting either a cross (x) for the answer "yes" and "applicable" or a (-) for the answers "no" and "not applicable" as appropriate.
4. Unless otherwise stated, Regulations mentioned in this Record refer to 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 Distinctive number or letters

## 1.3 IMO number

## 1.4 Port of registry

## 1.5 Gross tonnage

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

1.7 Date of commencement of major engine conversion (if applicable) (Regulation 13):

## 2 Control of emissions from ships

### 2.1 Ozone depleting substances (Regulation 12)

2.1.1 The following fire extinguishing systems and equipment containing halons may continue in service:

System equipment	Location on board

2.1.2 The following systems and equipment containing CFCs may continue in service:

System equipment	Location on board

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

System equipment	Location on board

### 2.2 Nitrogen oxides (NO<sub>x</sub>) (Regulation 13)

2.2.1 The following diesel engines with power output greater than 130 kW, and installed on a ship constructed on or after 1 January 2000, comply with the emission standards of Regulation 13(3)(a) in accordance with the NO<sub>x</sub> Technical Code:

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (RPM)

2.2.2 The following diesel engines with power output greater than 130 kW, and which underwent major conversion per Regulation 13(2) on or after 1 January 2000, comply

with the emission standards of Regulation 13(3)(a) in accordance with the NOx Technical Code:

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (RPM)

2.2.3 The following diesel engines with a power output greater than 130 kW and installed on a ship constructed on or after 1 January 2000, or with a power output greater than 130 kW and which underwent major conversion per regulation 13(2) on or after 1 January 2000, are fitted with an exhaust gas cleaning system or other equivalent methods in accordance with Regulation 13(3), and the NOx Technical Code:

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (RPM)

2.2.4 The following diesel engines from 2.2.1, 2.2.2 and 2.2.3 above are fitted with NOx emission monitoring and recording devices in accordance with the NOx Technical Code:

Manufacturer and model	Serial number	Use	Power output (kW)	Rated speed (RPM)

### 2.3 Sulphur oxides (SOx) (Regulation 14)

2.3.1 When the ship operates within an SOx Emission Control Area specified in Regulation 14(3), the ship uses:

.1 fuel oil with a sulphur content that does not exceed 1.5% m/m as documented by bunker delivery notes; or

.2 an approved exhaust gas cleaning system to reduce SOx emissions below 6.0g SOx/kWh; or

.3 other approved technology to reduce SOx emissions below 6.0g SOx/kWh

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

2.5 The ship has an incinerator:

.1 which complies with Resolution MEPC.76(40) as amended

.2 installed before 1 January 2000 which does not comply with Resolution MEPC.76(40) as amended

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

Issued at

*(Place of issue of the Record )*

.....

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

*issuing the Record )*

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

**APPENDIX II**

**TEST CYCLES AND WEIGHTING FACTORS**

**(Regulation 13)**

The following test cycles and weighing factors should be applied for verification of compliance of marine diesel engines with the NO<sub>x</sub> limits in accordance with Regulation 13 of this Annex using the test procedure and calculation method as specified in the NO<sub>x</sub> technical Code.

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

.2 For variable pitch propeller sets test cycle E2 should be applied.

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

.4 For constant speed auxiliary engines test cycle D2 should be applied.

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

Test cycle for "Constant Speed main Propulsion" application

(incl. diesel electric drive or variable 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 D2	Power	100%	75%	50%	25%	10%
	Weighting factor	0.5	0.25	0.3	0.3	0.1

Test cycle for "Variable Speed and Load Auxiliary Engine" application

	Speed	Rated				Intermediate			Idle
Test cycle type C1	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

### APPENDIX III

#### CRITERIA AND PROCEDURES FOR DESIGNATION OF SO<sub>x</sub> EMISSION CONTROL AREAS

##### (Regulation 14)

#### 1 OBJECTIVES

1.1 The purpose of this Appendix is to provide the criteria and procedures for the designation of SO<sub>x</sub> Emission Control Areas. The objective of SO<sub>x</sub> Emission Control Areas is to prevent, reduce and control air pollution from SO<sub>x</sub> emissions from ships and their attendant adverse impacts on land and sea areas.

1.2 A SO<sub>x</sub> Emission Control Area should be considered for adoption by the Organization if supported by a demonstrated need to prevent, reduce and control air pollution from SO<sub>x</sub> emissions from ships.

#### 2 PROPOSAL CRITERIA FOR DESIGNATION OF A SO<sub>x</sub> EMISSION CONTROL AREA

2.1 A proposal to the Organization for designation of a SO<sub>x</sub> Emission Control Area may be submitted only by contracting States to the Protocol of 1997. Where two or more contracting States have a common interest in a particular area, they should formulate a coordinated proposal.

2.2 The proposal shall include:

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

.2 a description of the land and sea areas at risk from the impacts of ship SOx emissions;

.3 an assessment that SOx emissions from ships operating in the proposed area of application of the SOx emission controls are contributing to air pollution from SOx, including SOx deposition, and their attendant adverse impacts on the land and sea areas under consideration. Such assessment shall include a description of the impacts of SOx emissions on 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;

.4 relevant information pertaining to the meteorological conditions in the proposed area of application of the SOx emission controls and the land and sea areas at risk, in particular prevailing wind patterns, or to topographical, geological, oceanographic, morphological or other conditions that may lead to an increased probability of higher localized air pollution or levels of acidification;

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

.6 a description of the control measures taken by the proposing contracting State or contracting States addressing land-based sources of SOx emissions affecting the area at risk that are in place and operating concurrent with the consideration of measures to be adopted in relation to provisions of Regulation 14 of Annex VI of the present Convention.

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

2.4 A proposal to designate a given area as an SO<sub>x</sub> Emission Control Area should be submitted to the Organization in accordance with the rules and procedures established by the Organization.

### 3 PROCEDURES FOR THE ASSESSMENT AND ADOPTION OF SO<sub>x</sub> EMISSION CONTROL AREAS BY THE ORGANIZATION

3.1 The Organization shall consider each proposal submitted to it by a contracting State or contracting States.

3.2 A SO<sub>x</sub> 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.

3.3 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 2 above, and the relative costs of reducing sulphur depositions from ships when compared with land-based controls. The economic impacts on shipping engaged in international trade should also be taken into account.

### 4 OPERATION OF SO<sub>x</sub> EMISSION CONTROL AREAS

4.1 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) Shipboard incinerators described in Regulation 16(2) 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(2). 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 operators within the limits specified in paragraph (2) of this Appendix:

Sludge oil consisting of: 75% sludge oil from HFO;

5% waste lubricating oil; and

20% emulsified water.

Solid waste consisting of: 50% food waste

50% rubbish containing

approx. 30% paper,

approx. 40% cardboard,

approx. 10% rags,

approx. 20% plastic

The mixture will have up to 50% moisture and 7% incombustible solids.

(2) Incinerators described in Regulation 16(2) 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: 850-1200 degrees Celcius

## APPENDIX V

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

(Regulation 18(3))

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 15C, kg/m<sup>3</sup>

Sulphur content (%m/m)

A declaration signed and certified by the fuel oil supplier's representative that the fuel oil supplied is in conformity with Regulation 14(1) or (4)(a) and Regulation 18(1) of this Annex.