ANNEX 5

RESOLUTION LDC.33(11)

AMENDMENTS TO THE INTERIM TECHNICAL SUIDELINES ON THE CONTROL OF INCINERATION OF WASTES AND OTHER MATTER AT SEA

THE ELEVENTH CONSULTATIVE MEETING,

RECOGNIZING that Contracting Parties to the Convention when issuing permits for incineration at sea should take full account of the Interim Technical Guidelines on the Control of Incineration of Wastes and Other Matter at Sea, which had been adopted by the Fourth Consultative Meeting and were subsequently amended by the Fifth, Seventh and Eighth Consultative Meeting,

NOTING that the Scientific Group on Dumping after consideration of the report of the Joint LDC/OSCOM Group of Experts on Incineration at Sea (LDC/OSCOM/IAS 2/9, LDC/OSCOM/IAS 2/9/Corr.1) agreed that further amendments to the Interim Technical Guidelines on the Control of Incineration of Wastes and Other Matter at Sea were warranted to better reflect the current incineration operational techniques and practices,

1 ADOPTS amendments to the Interim Technical Guidelines on the Control of Incineration of Wastes and Other Matter at Sea

2 RESOLVES that Contracting Parties to the Convention should:

- take full account of the new Interim Technical Guidelines on the Control of Incineration of Wastes and Other Matter at Sea as shown in annex;

- give preference to "no waste" and "low waste" technologies when considering individual proposals on incineration at sea.

ANNEX

# INTERIM TECHNICAL GUIDELINES ON THE CONTROL OF INCINERATION OF WASTES AND OTHER MATTER AT SEA

## 1 INTRODUCTION

1.1 In 1978 the Third Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter adopted Resolution LDC Resolution 5(III) by which it approved the following amendments to the Annexes to the Convention concerning the prevention and control of pollution by incineration of wastes and other matter at sea:

.1 the addition of a paragraph 10 to Annex I;

.2 the addition of a paragraph E to Annex II; and

.3 the addition of an Addendum to Annex I, containing Regulations for the Control of Incineration of Wastes and Other Matter at Sea.

1.2 Under these amendments, the Contracting Parties shall, in the issue of permits for incineration, apply the Regulation for the Control of Incineration of Wastes and Other Matter at Sea and take full account of the Technical Guidelines on the Control of Incineration of Wastes and Other Matter at Sea adopted by the Contracting Parties in consultation. The requirements for the issue of permits for different types of wastes are summarized in the following table:

| | Substance | Permit | Regulations | Technical Guidelines |
|---|---|---|---|---|
| 1 | Organohalogen compounds; Pesticides and by-products | Special | All provisions of the Regulations in Parts I and II to be applied | All provisions of the Technical Guidelines to be taken into full account |
| 2 | Crude oil, fuel oil, etc. taken on board for purpose of disposal; Annex II substances (without pesticides) | Special | Control to the satisfaction of Contracting Parties, taking into account: all applicable provisions of Regulations in Parts I and II | all applicable provisions of the Technical Guidelines |
| 3 | Substances not mentioned under (1) and (2) above | General | | as under (2) above |

1.3 The present Guidelines have been developed on the basis of existing scientific knowledge of the incineration process and on a knowledge of current technology. Although the state of knowledge on the incineration of liquid organochlorine wastes in existing vessels has enabled specific guidelines to be drawn up covering the incineration of these wastes, there remain types of wastes where knowledge is insufficient at present. Scientific work and technical development is, however, proceeding and consequently these Guidelines should be kept under review as the results of further research and investigation become available.

1.4 These Technical Guidlines apply to wastes or other matter loaded or kept on board marine incineration facilities which are defined in Regulation 1(1) and include vessels, platforms or other man-made structures which might at some future date carry out factory operations and generate wastes which could be incinerated at sea. Incineration at sea is defined in Regulation 1(2) and

exclude activities incidental to the normal operation of ships (e.g. combustion of ship-generated garbage) or platforms (e.g. flaring of gas from oil production or exploration).

1.5 The incineration of waste at sea must be controlled to safeguard a number of uses of the marine environment as laid down in Annex III to the Convention and the Guidelines for the Implementation and Uniform Interpretation of Annex III, in particular with regard to the specific advice provided on the practical availability of alternative land-based methods of treatment, disposal or elimination, or of treatment to render the matter less harmful as set out under section C4 of the Guidelines. Additionally, the Resolution of the First Consultative Meeting of Contracting Parties to the London Dumping Convention (1976) recognized that the risks of atmospheric pollution should be taken into account.

1.6 Where the word 'Convention as amended in 1978' is used, this is to be understood as reference to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, with amendments to the Annexes to the Convention adopted in 1978 as listed under 1.1 above. Where the word 'Regulation' is used, this is to be understood as reference to the corresponding regulation of the Addendum to Annex I to the Convention as mentioned in 1.1.3 above.

## 2 APPROVAL AND SURVEYS OF THE INCINERATION SYSTEM

### 2.1 Responsibility of Contracting Parties

2.1.1 The initial survey of the marine incineration facility referred to in Regulation 3 should be the responsibility of a Contracting Party. Subsequent surveys of the marine incineration facilities should be the responsibility of the Contracting Party which conducted the initial survey or of a Contracting Party responsible for issuing a permit for current operations in consultation with that Contracting Party.

## 3 INCINERATION OPERATIONS

### 3.1 Waste type and feed rates of waste to the incinerator

3.1.1 Continuous flow-measuring devices for recording liquid waste flow rate should be installed on marine incineration facilities. Additional methods of control should be based on a continuous display of the waste and fuel pump status supplemented by manual checks of the type and amount of waste burned every hour, weather and sea state permitting, to be recorded in the log.

3.1.2 Where solid wastes are burned, the waste type and rate of input should be recorded in the log.

3.1.3 The feeding of wastes in containers to the incinerator will necessitate special design and operational requirements in order to comply with Regulation 5. These should include but not be limited to:

.1 the waste should be fed to the incinerator at such a rate that the oxygen demand is well within the capability of the combustion air fan; and

.2 the waste should be fed to the incinerator via an air lock chamber.

### 3.2 Black smoke and flames above the stack

3.2.1 With regard to Regulation 5(3) "that there shall be no black smoke nor flame extensions above the plane of the stack" experience has shown that under certain operating conditions the appearance of black smoke and flames above the plane of the stack is unavoidable. Such conditions include the following:

.1 the preheating of the incinerator with oil before the incinerator has reached the required operating temperature;

.2 the first introduction of wastes into the preheated incinerator; and

.3 the change of different waste types introduced into the incinerator.

3.2.2 Contracting Parties should ensure that operating standards are used that minimize such occurrences.

3.3 Air feed to the incinerator

3.3.1 The amount of air entering the incinerator should be sufficient to ensure that a minimum of 3 per cent oxygen is present in the combustion gases near the incinerator stack exit. This requirement should be monitored by an automatic oxygen analyser to routinely record oxygen concentrations.

3.3.2 Although existing incinerator vessels employ a fixed air input rate, marine incineration facilities may in the future use a variable air feed in which case this rate should be recorded.

3.4 Temperature controls

3.4.1 Temperature controls and records should be based on the measurement of wall temperature. Unless otherwise determined by the Contracting Party there should be three or more temperature measurement devices for each incinerator.

3.4.2 In order to comply with Regulation 5 the Contracting Party should define the operating wall temperature and the temperature below which the flow of waste to the incinerator should be automatically shut off by approved equipment.

3.4.3 The minimum wall temperature should be 1200°C unless the results of tests on the marine incineration facility demonstrate that the required combustion and destruction efficiencies specified in Regulations 3 and 5 can be achieved at a lower temperature.

3.5 Destruction efficiency

3.5.1 For the purpose of applying Regulation 3 the destruction efficiency should be determined not only for the total organic components of the wastes but additionally for particular substances such as those listed in 5.1.3.

3.6 Residence time

3.6.1 The mean residence time of the incinerator should be of the order of one second or longer at a flame temperature of 1250°C (e.g. as measured by an optical pyrometer) during normal operating conditions.

3.7 Automatic shut-off systems

3.7.1 Devices to shut off the waste feed to the incinerator in accordance with Regulation 3 should include the following:

.1 flame sensors with each burner to stop waste flow to that burner in the event of a flame-out; and

.2 automatic equipment to stop waste flow in the event of wall temperatures falling below 1100°C or the temperature determined in 3.4.3.

3.8 Positioning of measuring devices

3.8.1 In applying Regulation 3(1)(b)(i) and (ii) to approve the siting of temperature measuring devices and gas sampling probes the Contracting Party should take into account that in certain cases flames can be non-homogeneous (e.g. through vortex formation in the incinerator or during incineration of solid or containerized wastes).

4 GENERAL CONTROL OF THE MARINE INCINERATION FACILITY AND ITS OPERATION

4.1 Loading and stowage of wastes

4.1.1 Due to the risk of spillages wastes should not be transferred from barges or other vessels to marine incineration facilities outside harbour limits except where special arrangements have been made for the prevention of spillages to the satisfaction of the Contracting Party.

4.1.2 Wastes in damaged containers should not be taken on board marine incineration facilities.

4.1.3 Containers loaded on board should be adequately labelled.

4.1.4 Containerized wastes should be stowed in accordance with the regulations of the IMO International Maritime Dangerous Goods Code (IMDG Code).

4.2 Disposal of residues

4.2.1 Tank washings and pump-room bilges contaminated with wastes should be incinerated at sea in accordance with the Regulations for the Control of Incineration of Wastes and Other Matter at Sea and with these Technical Guidelines, or discharged to port facilities.

4.2.2 Residues remaining in the incinerator should not be dumped at sea except in accordance with the provisions of the Convention.

4.3 Prevention of hazards to other vessels

4.3.1 In licensing the incineration of wastes and other matter on board approved marine incineration facilities, the Contracting Party should have regard to the need to avoid hazards to other vessels by appropriate location of the incineration sites or incineration zones concerned and by ensuring that the relevant maritime authorities are notified of the date of sailing and/or intended schedule, as well as the intended movements of the marine incineration facility (whether underway, at anchor, etc.).

4.3.2 Regular radio warnings should be broadcast during the period of incineration.

4.3.3 Contracting Parties in a given geographical area should endeavour to designate common incineration sites in the area.

4.4 Construction of marine incineration facilities

4.4.1 For the carriage of liquid wastes an incineration ship shall carry a valid "Certificate of Fitness" as required under the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code, Chapter 19: Requirements for Ships Engaged in the Incineration at Sea of Liquid Chemical Waste).

4.5 Data recording

4.5.1 In addition to the records required by Regulation 6 of the Addendum to Annex I, marine incineration facilities should also record:

.1 the oxygen concentration in the combustion gases as monitored in accordance with 3.3.1 of these Guidelines;

.2 the air feed rate in accordance with 3.3.2;

.3 the tank(s) from which waste is taken; and

.4 the meteorological conditions, e.g. wind speed and direction.

4.5.2 For the purposes of Regulation 6 and Guideline 3.1.1 "continuous" measurements means that for sampling and datalogging a frequency is chosen which ensures that there is adequate control over incineration operations and that they are carried out in accordance with the requirements of the Regulations and the Interim Technical Guidelines for the Control of Incineration of Wastes and Other Matter at Sea. As a minimum, a frequency of at least 15 minutes is required. For automatic shut-off systems referred to in Guideline 3.7 above, immediate response of the system to temperature decreases below the required operating temperatures is necessary.

4.5.3 Parameters which may require recording in the future, subject to satisfactory technical development, include routine measurement of destruction efficiency and total particulate matter in the combustion gases.

4.5.4 The result of the recording devices under Regulation 6 and the data recording described in paragraphs 4.5.1 to 4.5.3 above should be provided to the Contracting Party which had issued the incineration permit. Where more than one Contracting Party had issued a permit for one incineration operation, arrangements for review of the data should be made among the Contracting Parties involved.

## 5 NATURE OF WASTES OR OTHER MATTER AND NOTIFICATION PROCEDURES

### 5.1 Characteristics of wastes

5.1.1 Information on the characteristics of wastes or other matter to be provided in connection with a permit application in accordance with Regulation 7 should include in addition to that in the Appendix hereto, if possible, information on the chemical and physical transformation of the waste after incineration, in particular, subsequent formation of new compounds, composition of ashes or unburned residues.

5.1.2 The physical nature of certain wastes may lead to reduced destruction efficiencies:

.1 emulsions or high concentrations of particulates may lead to atomization problems causing disruption of stable incinerator performance. When possible, pre-treatment of the wastes to reduce these features is advised; and

.2 water layers may also cause a disturbance of the incineration performance at the moment when the water layer "hits" the flame zone. Nonetheless, adequate destruction efficiency of such layers can be achieved by ensuring a homogeneuous waste feed to the incinerator through the use of mixing techniques in the on-board storage tanks and, where appropriate, the use of support fuels.

5.1.3 For the purpose of Regulation 4, examples of wastes or other matter over which doubts exist as to the thermal destruction and efficiency of combustion are listed as follows:

.1 Polychlorinated biphenyls (PCB's)
.2 Polychlorinated terphenyls (PCT's)
.3 Tetrachloro-dibenzo-p-dioxin (TCDD)
.4 Benzene hexachloride (BHC)
.5 Dichlorodiphenyl trichloroethane (DDT).

5.2 Compliance with paragraphs 8 and 9 of Annex I of the Convention

5.2.1 The Contracting Party must ensure through the application of procedures adopted by Contracting Parties in consultation that the incineration of a waste containing Annex I substances should not result in the introduction of Annex I substances into the marine environment unless these are rapidly rendered harmless or are present as trace contaminants. Based on current scientific knowledge on the environmental effects of incinerating liquid organochlorine compounds, this requirement is considered to be met if the Regulations and Technical Guidelines are observed.

5.2.2 Where it is proposed to incinerate wastes at sea containing other Annex I substances or organochlorine compounds referred to in 5.1.3, it will be necessary to determine that the residues entering the marine environment after incineration are rapidly rendered harmless or present as trace contaminants through procedures adopted by the Contracting Parties in consultation.

5.3 Notification of permits issued for incineration at sea

5.3.1 Each Contracting Party should immediately notify the Organization of a Special Permit issued for incineration of wastes or other matter at sea in accordance with Regulation 2(3). A record of the General Permits issued for incineration in the previous calendar year in accordance with Regulation 2(4) should be sent directly or through a Secretariat established under a regional agreement to the Organization by 31 March in each year.

5.3.2 The notifications should contain for each permit the kind of information set out in Appendix hereto.

5.3.3 The Organization should treat notifications of incineration permits in the same way as permits issued for dumping.

# APPENDIX

## NOTIFICATION FORM FOR INCINERATION PERMITS

The notification shall contain the following information for each permit:

1 issuing authorities;

2 date issued;

3 period for which the permit is valid;

4 country of origin of wastes and port of loading;

5 total quantity of wastes (in metric units) covered by the permit;

6 form in which the waste is presented (bulk or containers; in the latter case, also size and labelling);

7 composition of the waste, such as:

.1 principal organic components;

.2 organohalogens;

.3 main inorganic components;

.4 solids in suspension; and

.5 other relevant constituents;

8 properties of the waste, such as:

.1 physical form;

.2 specific gravity;

.3 viscosity;

.4 calorific value;

.5 radioactivity; and

.6 toxicity and persistence, if necessary;

9 industrial process giving rise to the waste;

10 name of the marine incineration facility and state of registration;

11 area of incineration (geographical location; distance from the nearest coast);

12 expected frequencies of incineration;

13 special conditions relating to the operation of the marine incineration facility which are more stringent than those specified in the Regulations or other than those in the Technical Guidelines;

14 additional information, such as relevant factors listed in Annex III to the Convention.

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